**CLASS 544, ORGANIC COMPOUNDS -- PART OF THE CLASS 532-570 SERIES**

SUBCLASSES

**1** This subclass is indented under subclass 1. Compounds under Class 540, ... which contain a six-membered hetero ring having two or more ring hetero atoms of which at least one is nitrogen.

SEE OR SEARCH CLASS:
588, Hazardous or Toxic Waste Destruction or Containment, appropriate subclasses for the destruction of hazardous or toxic waste.

**2** This subclass is indented under subclass 1. Compounds wherein the six- membered hetero ring includes at least one atom each of oxygen, sulfur, nitrogen and carbon and contains no other elements as ring members.

**3** This subclass is indented under subclass 1. Compounds wherein the six- membered hetero ring includes at least one atom each of sulfur, nitrogen and carbon and contains no other elements as ring members.

**4** This subclass is indented under subclass 3. Compounds which include aluminum or a metal having a specific gravity greater than four.

(1) Note. Arsenic is considered a metal.

**5** This subclass is indented under subclass 3. Compounds wherein the six-membered hetero ring contains at least two ring sulfurs in addition to the nitrogen and carbon.

**6** This subclass is indented under subclass 3. Compounds which contain a spiro ring system.

**7** This subclass is indented under subclass 3. Compounds wherein the six-membered hetero ring contains at least two atoms of nitrogen in addition to the sulfur and carbon.

**8** This subclass is indented under subclass 7. Compounds wherein the six-membered hetero ring consists of two nitrogen atoms, one sulfur atom and three carbon atoms.

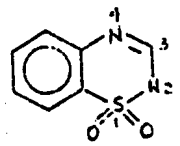
**9** This subclass is indented under subclass 8. Compounds wherein the thiadiazine ring is one of the cyclos of a polycyclo ring system.

**10** This subclass is indented under subclass 9. Compounds wherein the polycyclo ring system consists of two rings, one of which is the thiadiazine ring.

**11** This subclass is indented under subclass 10. Compounds wherein the bicyclo ring system consists of the thiadiazine ring and a benzene ring.

**12** This subclass is indented under subclass 11. Compounds wherein the sulfur atom is in the 1-position and the nitrogen atoms are in the 2- and 4-positions of the six-membered hetero ring.

(1) Note. An example of a structure provided for herein is:



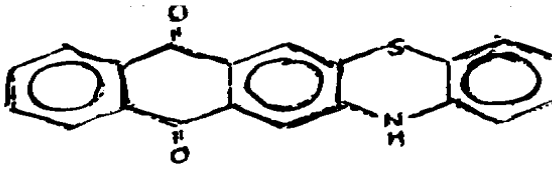
**13** This subclass is indented under subclass 12. Compounds which contain a sulfamyl or substituted sulfamyl group; viz., $-SO_2N$ or $-SO_2N=$.

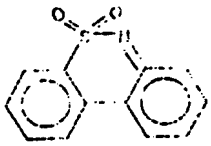
(1) Note. The diuretic 1, 2, 4-benzothiadiazines with benzosulfamyl substituents are provided for herein.

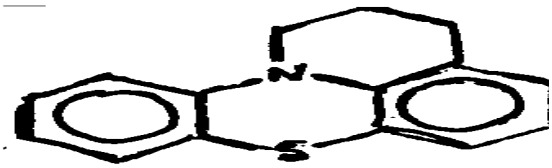
**14** This subclass is indented under subclass 3. Compounds wherein the six-membered hetero ring is one of the cyclos of a polycyclo ring system.

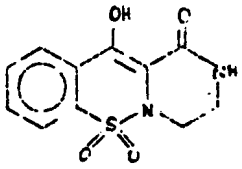
**31** This subclass is indented under subclass 14. Compounds wherein the polycyclo ring system contains four or more rings of which three form the phenothiazine structure.

(1) Note. This subclass provides for compounds such as the structures below, etc.:



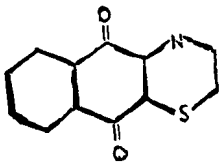


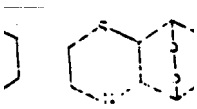




**32** This subclass is indented under subclass 14. Compounds in which the polycyclo ring system consists of three rings, one of which is the six-membered hetero ring.

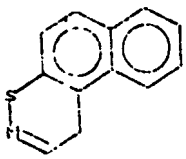
(1) Note. This subclass provides for compounds such as:





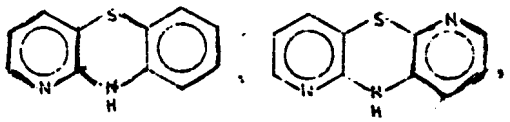
**33** This subclass is indented under subclass 32. Compounds in which the ring sulfur and ring nitrogen of the six-membered hetero ring are in adjacent positions.

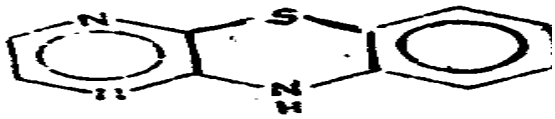
(1) Note. This subclass provides for compounds such as:



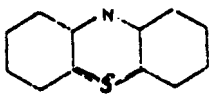
**34** This subclass is indented under subclass 32. Compounds wherein the tricyclo ring system contains at least two ring nitrogens.

(1) Note. This subclass provides for compounds such as the structures below, etc.:





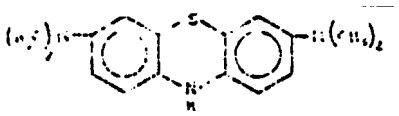
**35** This subclass is indented under subclass 32. Compounds wherein the tricyclo ring system has the following basic structure, in which the bonds between ring members may be double or single bonds.



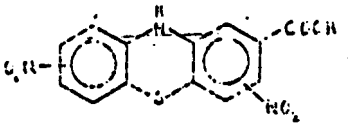
**36** This subclass is indented under subclass 35. Processes wherein the phenothiazine containing compound is separated from impurities or from the reaction mixture.

**37** This subclass is indented under subclass 35. Compounds which include nitrogen bonded directly to the phenothiazine ring system.

(1) Note. This subclass provides largely for phenothiazine dyes which have one or more substituted amino groups on the benzo moiety, such as leuco methylene blue,



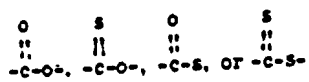
(2) Note. This subclass also provides for any nitrogen containing substituent wherein the nitrogen atom is bonded directly to the benzo rings; e.g., the structure below.



**38** This subclass is indented under subclass 35. Compounds which contain carbon bonded directly to the ring nitrogen of the phenothiazine ring system.

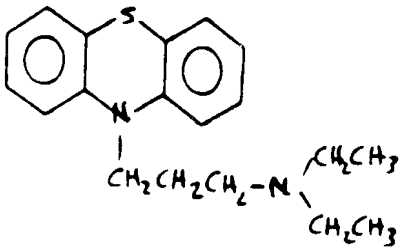
**39** This subclass is indented under subclass 38. Compounds wherein divalent chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is double bonded directly to the carbon which is bonded directly to the ring nitrogen of the phenothiazine ring system.

**40** This subclass is indented under subclass 39. Compounds which include the structure below bonded directly to the ring nitrogen of the phenothiazine ring system, or an analog of another chalcogen (i.e., oxygen, sulfur, selenium or tellurium).



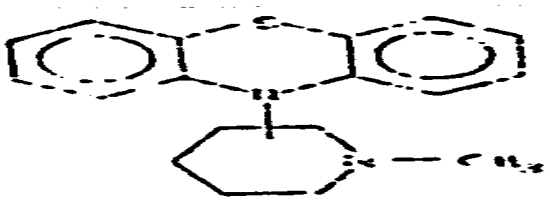
**41** This subclass is indented under subclass 38. Compounds wherein a nitrogen containing substituent is bonded directly to the ring nitrogen of the phenothiazine ring system.

(1) Note. This subclass provides for phenothiazines of the following type:

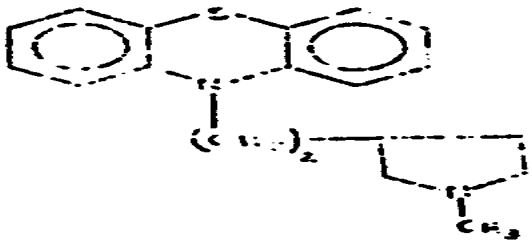


**42** This subclass is indented under subclass 41. Compounds in which the nitrogen containing substituent includes a hetero ring, which hetero ring has at least nitrogen as a ring hetero atom.

(1) Note. Examples of compounds provided for herein are:



(a)

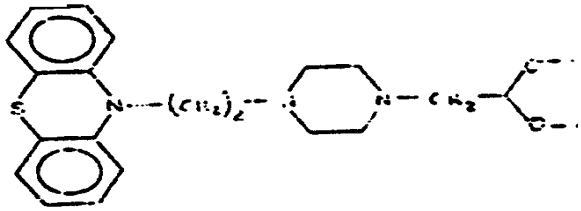


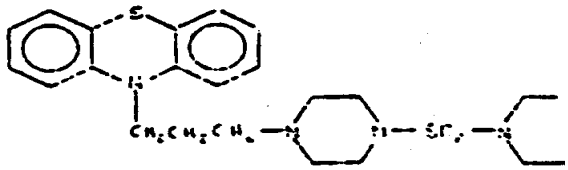
(b)

(2) Note. The substituent may contain a phenothiazine ring as its nitrogen containing hetero ring.

**43** This subclass is indented under subclass 42. Compounds in which the nitrogen containing substituent includes at least two hetero rings.

(1) Note. Included in this subclass are structures suc h as:

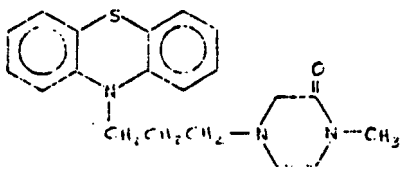


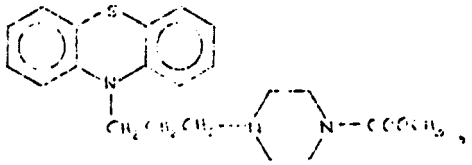


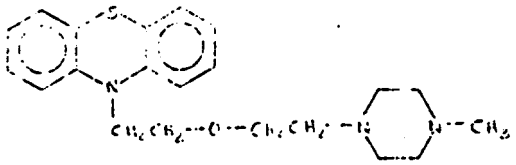
**44** This subclass is indented under subclass 42. Compounds in which the hetero ring in the nitrogen containing substituent is a fully hydrogenated six-membered ring having nitrogen in the 1- and 4-positions and carbon in the other four positions.

**45** This subclass is indented under subclass 44. Compounds which include chalcogen (i.e., oxygen, sulfur, selenium or tellurium) in the nitrogen containing substituent.

(1) Note. Examples of compounds provided for herein are:



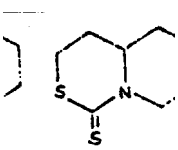




**46** This subclass is indented under subclass 42. Compounds which include chalcogen (i.e., oxygen, sulfur, selenium or tellurium) in the nitrogen containing substituent.

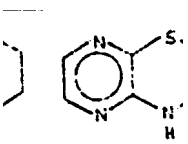
**47** This subclass is indented under subclass 14. Compounds wherein the polycyclo ring system consists of exactly two rings, one of which is the six-membered hetero ring.

(1) Note. An example of a compo und provided for herein is:



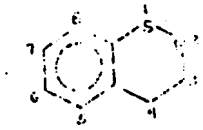
**48** This subclass is indented under subclass 47. Compounds wherein the bicyclo ring system contains at least one ring hetero atom in addition to the ring sulfur and ring nitrogen of the thiazine ring.

(1) Note. An example of a structure provided for herein is:

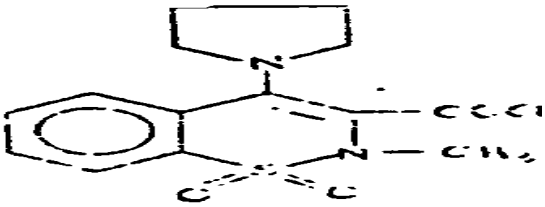


**49** This subclass is indented under subclass 47. Compounds wherein the bicyclo ring system consists of a benzene ring sharing two adjacent carbons of the six-membered hetero ring.

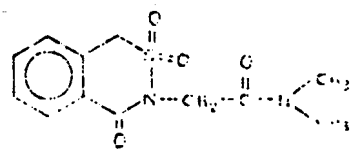
(1) Note. The following shows the position numbering used for benzothiazines: It is pointed out that the two carbons common to both rings are not numbered. The nitrogen and sulfur may be in any of positions 1, 2, 3, and 4.



(2) Note. Examples of compounds provided for herein are:

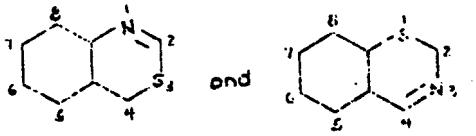


and



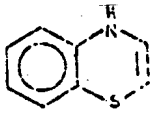
**50** This subclass is indented under subclass 49. Compounds wherein the ring hetero atoms of the benzothiazine ring system are in the 1-and 3-positions.

(1) Note. Examples of compounds provided for herein are:



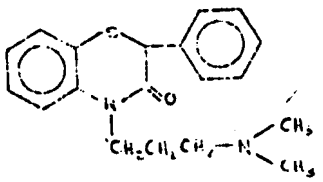

**51** This subclass is indented under subclass 49. Compounds wherein the sulfur and nitrogen atoms of the benzothiazine ring system are in para-position to each other.

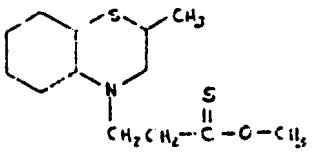
(1) Note. An example of a compound provided for herein is:



**52** This subclass is indented under subclass 51. Compounds which include a double bonded divalent chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

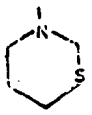
(1) Note. This subclass is intended to include compounds such as:





**53** This subclass is indented under subclass 3. Compounds wherein the six-membered hetero ring has sulfur in the 1-position, nitrogen in the 3-position and carbon in the other four positions.

(1) Note. This subclass provides for compounds containing the following ring which may have double bonds.



**54** This subclass is indented under subclass 53. Compounds which include a double bonded divalent chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

**55** This subclass is indented under subclass 53. Compounds which include an additional hetero ring.

**56** This subclass is indented under subclass 3. Compounds wherein the six-membered hetero ring has sulfur in the 1-position, nitrogen in the 4-position and carbon in the other four positions.

**57** This subclass is indented under subclass 56. Compounds which include phosphorus in a salt or attached by nonionic bonding.

**58.1** This subclass is indented under subclass 56. Compounds which include double bonded divalent chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

**58.2** This subclass is indented under subclass 58.1. Compounds wherein divalent chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is double bonded directly to the thiazine ring.

**58.4** This subclass is indented under subclass 58.1. Compounds wherein a group, in which X is chalcogen (i.e. oxygen, sulfur, selenium, or tellurium), is bonded directly to the thiazine ring.

**58.5** This subclass is indented under subclass 58.1. Compounds which include an additional hetero ring.

SEE OR SEARCH THIS CLASS, SUBCLASS:

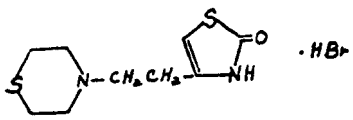
58.6, for compounds in which the additional hetero ring is also a thiazine ring.

**58.6** This subclass is indented under subclass 58.5. Compounds having, in addition to the thiazine ring, a six-membered hetero ring which has at least one ring nitrogen.

(1) Note. The additional six-membered hetero ring may be another thiazine ring.

**58.7** This subclass is indented under subclass 58.5. Compounds having, in addition to the thiazine ring, a hetero ring which includes a ring chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

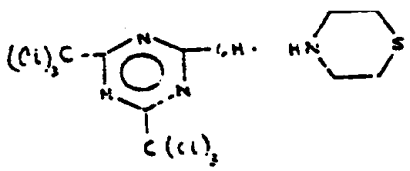
(1) Note. An example of a compound provided for herein is:



**59** This subclass is indented under subclass 56. Compounds in which the six-membered hetero ring contains no double bonds.

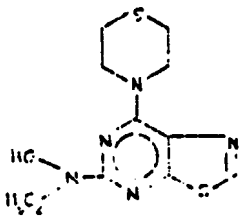
**60** This subclass is indented under subclass 59. Compounds which include an additional hetero ring.

(1) Note. This subclass provides for salts of heterocyclic compounds with thiomorpholine , e.g., illustrated below, etc.



**61** This subclass is indented under subclass 60. Compounds wherein the additional hetero ring is a cyclo in a bicyclo ring system.

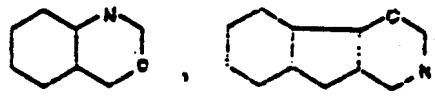
(1) Note. An example of a compound provided for herein is:

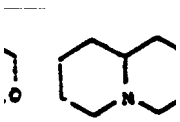


**62** This subclass is indented under subclass 61. Compounds wherein a benzene ring is the other cyclo of the bicyclo ring system.

**63** This subclass is indented under subclass 1. Compounds in which the six-membered hetero ring consists of oxygen, nitrogen and carbon.

(1) Note. An oxazine ring in a polycyclo ring system is numbered as if it were a single ring and not part of a ring system: therefore, in each of the following:





the oxazine ring is considered to be 1, 3-oxazine and classified accordingly.

**64** This subclass is indented under subclass 63. Compounds which contain aluminum or a metal with a specific gravity greater than 4.

(1) Note. Arsenic is considered a metal for the purposes of this subclass.

**65** This subclass is indented under subclass 63. Compounds wherein the six-membered ring contains at least two ring oxygens.

**66** This subclass is indented under subclass 63. Compounds wherein the six-membered ring contains at least two ring nitrogens.

**67** This subclass is indented under subclass 66. Compounds wherein oxygen is in the 1-position, nitrogen is in the 3- and 5-positions and carbon is in the remaining three positions of the six-membered hetero ring.

**68** This subclass is indented under subclass 66. Compounds in which oxygen is bonded directly to the six-membered ring.

**69** This subclass is indented under subclass 63. Compounds which contain boron or silicon.

**70** This subclass is indented under subclass 63. Compounds which contain a spiro ring system.

**71** This subclass is indented under subclass 70. Compounds wherein at least one of the rings in the spiro ring system is a six-membered hetero ring consisting of oxygen, nitrogen and carbon.

**72** This subclass is indented under subclass 63. Compounds having at least two six-membered hetero rings each consisting of one ring oxygen, one ring nitrogen and four ring carbons.

**73** This subclass is indented under subclass 72. Compounds in which at least one of the six-membered hetero rings is a cyclo of a polycyclo ring system.

**74** This subclass is indented under subclass 73. Compounds wherein the polycyclo ring system contains at least two of the six-membered hetero rings, each having its oxygen in the 1-position and its nitrogen in the 4-position.

**75** This subclass is indented under subclass 74. Compounds in which the polycyclo ring system is composed of exactly five rings.

**76** This subclass is indented under subclass 75. Compounds in which two or more nitrogen atoms are directly bonded to the pentacyclo ring system.

**77** This subclass is indented under subclass 76. Compounds which contain nitrogen bonded directly to a group, wherein X is chalcogen (i.e. oxygen, sulfur, selenium, or tellurium).

**78** This subclass is indented under subclass 72. Compounds which contain at least two of the six-membered hetero rings, each having its oxygen in the 1-position, its nitrogen in the 4-position, and having no double bonds between ring members, i.e., morpholine rings.

SEE OR SEARCH THIS CLASS, SUBCLASS:

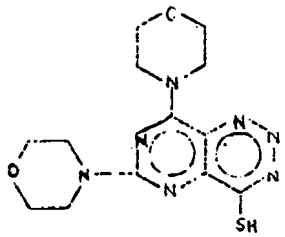
69, for compounds having plural morpholine rings and silicon or boron.

**79** This subclass is indented under subclass 78. Compounds which contain a polycyclo ring system.

**80** This subclass is indented under subclass 79. Compounds in which a nitrogen containing hetero ring is part of the polycyclo ring system.

**81** This subclass is indented under subclass 80. Compounds in which the polycyclo ring system contains at least four ring nitrogens.

(1) Note. An example of a compound provided for herein is:



**82** This subclass is indented under subclass 78. Compounds which have, in addition to the morpholine rings, another hetero ring which has a ring nitrogen.

**83** This subclass is indented under subclass 82. Compounds in which the additional hetero ring is six-membered having three ring nitrogens and three ring carbons.

**84** This subclass is indented under subclass 78. Compounds wherein phosphorus is attached directly or indirectly to a morpholine ring by nonionic bonding.

**85** This subclass is indented under subclass 78. Compounds wherein sulfur is attached directly or indirectly to a morpholine ring by nonionic bonding.

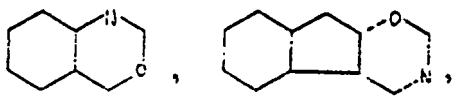
**86** This subclass is indented under subclass 78. Compounds wherein nitrogen is attached directly or indirectly to a morpholine ring by nonionic bonding.

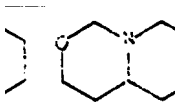
**87** This subclass is indented under subclass 78. Compounds wherein oxygen is attached directly or indirectly to a morpholine ring by nonionic bonding.

**88** This subclass is indented under subclass 63. Compounds wherein the six-membered hetero ring has oxygen in the 1-position, nitrogen in the 3-position and carbons in the remaining four positions.

**89** This subclass is indented under subclass 88. Compounds wherein the six-membered hetero ring is a cyclo in a polycyclo ring system.

(1) Note. An oxazine ring in a polycyclo ring system is numbered as if it were a single ring and not part of a ring system; therefore, in each of the following:





the oxazine ring is considered to be 1, 3-oxazine and classified accordingly.

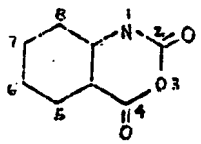
**90** This subclass is indented under subclass 89. Compounds in which the polycyclo ring system consists of exactly two rings.

**91** This subclass is indented under subclass 90. Compounds wherein the bicyclo ring system includes at least one ring hetero atom in addition to the ring oxygen and ring nitrogen of the six-membered hetero ring.

**92** This subclass is indented under subclass 90. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is bonded directly to the six-membered hetero ring.

**93** This subclass is indented under subclass 92. Compounds wherein at least two oxygen atoms are bonded directly to the six-membered hetero ring.

**94** This subclass is indented under subclass 93. Compounds which contain the isatoic anhydride configuration, wherein there may be double or single bonds between ring members.



**95** This subclass is indented under subclass 89. Compounds wherein the polycyclo ring system includes at least one ring hetero atom in addition to the ring oxygen and ring nitrogen of the six-membered hetero ring.

**96** This subclass is indented under subclass 88. Compounds which contain a hetero ring in addition to the six-membered hetero ring.

**97** This subclass is indented under subclass 88. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is bonded directly to the six-membered hetero ring.

**98** This subclass is indented under subclass 63. Compounds wherein the six-membered hetero ring has oxygen in the 1-position, nitrogen in the 4-position and carbons in the remaining four positions.

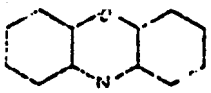
**99** This subclass is indented under subclass 98. Compounds wherein the six-membered hetero ring is one of the cyclos of a polycyclo ring system.

(1) Note. The positions of the six-membered hetero ring when it is part of a polycyclo ring system are numbered as if it were a single ring.

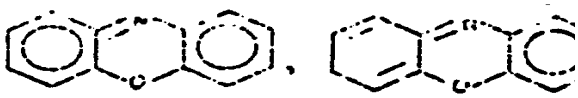
**100** This subclass is indented under subclass 99. Compounds which contain anthrone or anthraquinone as three cyclos of the polycyclo ring system.

**101** This subclass is indented under subclass 99. Compounds wherein the polycyclo ring system consists of three rings.

**102** This subclass is indented under subclass 101. Compounds wherein the tricyclo ring system has the following basic structure, illustrated below, in which the bonds between ring members may be single or double bonds.



(1) Note. This subclass provides for any compound which contains the phenoxazine skeleton, regardless of the degree of saturation or the shifting of double bonds, for example, as illustrated below, etc.



(2) Note. The gallocyanine dyes are found in this and indented subclasses.

**103** This subclass is indented under subclass 102. Compounds wherein two or more nitrogen atoms are bonded directly to the phenoxazine ring system.

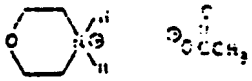
**104** This subclass is indented under subclass 102. Compounds which include sulfur.

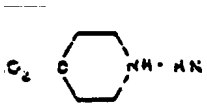
**105** This subclass is indented under subclass 99. Compounds in which the polycyclo ring system consists of two rings.

**106** This subclass is indented under subclass 98. Compounds wherein the six-membered hetero ring, having oxygen in the 1-position and nitrogen in the 4-position, has no double bonds between ring members.

**107** This subclass is indented under subclass 106. Compounds which are acid addition salts of (a) unsubstituted morpholine, or (b) morpholine substituted by hydrocarbon radicals only.

(1) Note. Examples of compounds provided for herein are:

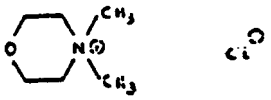




(2) Note. The substituents attached to the morpholine ring by nonionic bonding must contain only hydrogen and carbon.

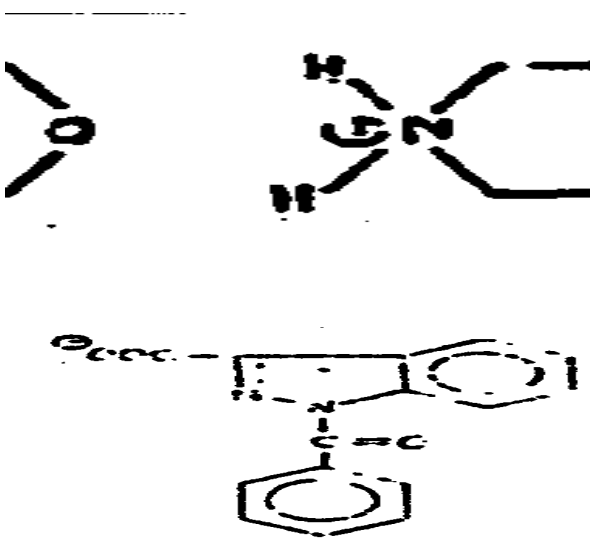
**108** This subclass is indented under subclass 107. Compounds in which the nitrogen atom of the morpholine ring is disubstituted with hydrocarbon moieties.

(1) Note. An example of an N, N-disubstituted compound provided for herein is:



**109** This subclass is indented under subclass 107. Compounds which contain a hetero ring in the portion of the compound which is ionically bonded to the morpholine ring.

(1) Note. An example of a compound provided for herein is:



**110** This subclass is indented under subclass 107. Compounds which include phosphorus or sulfur in the portion of the compound which is ionically bonded to the morpholine ring.

**111** This subclass is indented under subclass 106. Compounds having, in addition to the morpholine ring, a hetero ring which includes a ring nitrogen.

**112** This subclass is indented under subclass 111. Compounds in which the additional hetero ring is six-membered consisting of three ring nitrogens and three ring carbons.

**113** This subclass is indented under subclass 112. Compounds in which the three ring nitrogens of the additional six-membered hetero ring occupy the 1, 3, 5-positions.

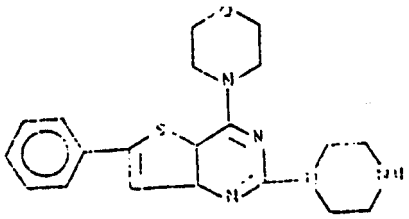
**114** This subclass is indented under subclass 111. Compounds in which the additional hetero ring is six-membered consisting of two ring nitrogens and four ring carbons.

**115** This subclass is indented under subclass 114. Compounds in which the additional six-membered hetero ring is one of the cyclos of a polycyclo ring system.

**116** This subclass is indented under subclass 115. Compounds in which the polycyclo ring system consists of exactly two rings.

**117** This subclass is indented under subclass 116. Compounds wherein the bicyclo ring system contains at least one ring hetero atom in addition to the two ring nitrogens of the additional six-membered hetero ring.

(1) Note. An example of a compound provided for herein is:



**118** This subclass is indented under subclass 117. Compounds wherein the bicyclo ring system cont

**119** This subclass is indented under subclass 116. Compounds which include acyclic nitrogen.

**120** This subclass is indented under subclass 114. Compounds in which the nitrogen atoms of the additional six-membered hetero ring are in the 1, 4-positions.

**121** This subclass is indented under subclass 120. Compounds in which the additional six-membered hetero ring is completely hydrogenated.

**122** This subclass is indented under subclass 114. Compounds in which the nitrogen atoms of the additional six-membered hetero ring are in the 1, 3-positions.

**123** This subclass is indented under subclass 122. Compounds in which oxygen is bonded directly to the additional six-membered hetero ring.

**124** This subclass is indented under subclass 111. Compounds in which the additional hetero ring is a six-membered ring consisting of one ring nitrogen and five ring carbons.

**125** This subclass is indented under subclass 124. Compounds in which the additional six-membered hetero ring is a cyclo of a polycyclo ring system.

**126** This subclass is indented under subclass 125. Compounds in which the polycyclo ring system consists of exactly three rings.

**127** This subclass is indented under subclass 125. Compounds in which the polycyclo ring system consists of exactly two rings.

**128** This subclass is indented under subclass 127. Compounds wherein the bicyclo ring system is characterized by having a six-membered carbocyclic ring ortho-fused to two carbons of the additional six-membered hetero ring.

**129** This subclass is indented under subclass 124. Compounds in which the additional six-membered hetero ring has no double bonds between ring members.

**130** This subclass is indented under subclass 129. Compounds which include double bonded divalent chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

**131** This subclass is indented under subclass 124. Compounds which include double bonded divalent chalcogen (i.e., oxygen, sulfur, selenium or tellurium).

**132** This subclass is indented under subclass 111. Compounds in which the additional hetero ring is five-membered having two or more ring hetero atoms, at least one of which is nitrogen.

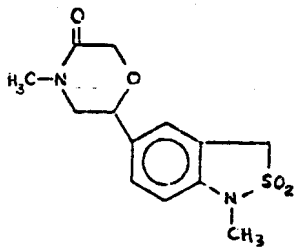
**133** This subclass is indented under subclass 132. Compounds in which the five-membered hetero ring contains a ring sulfur, in addition to the ring nitrogen, as a ring hetero atom.

**134** This subclass is indented under subclass 133. Compounds in which the five-membered hetero ring contains at least two ring nitrogens or at least two ring sulfurs.

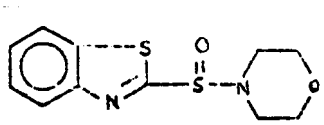
**135** This subclass is indented under subclass 133. Compounds wherein a six-membered carbocyclic ring is ortho-fused to two carbons of the

five-membered hetero ring forming a bicyclo ring system.

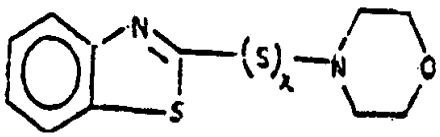
(1) Note. Examples of compounds provided for herein are:



**136** This subclass is indented under subclass 135. Compounds which contain a polysulfide linkage between the bicyclo ring system and the morpholine ring.



(1) Note. An example of a compound provided for in this subclass (where x is greater than or equal to 2) is:



**137** This subclass is indented under subclass 132. Compounds in which the five-membered hetero ring contains a ring oxygen, in addition to the ring nitrogen, as a ring hetero atom.

**138** This subclass is indented under subclass 137. Compounds in which the five-membered hetero ring consists of one ring oxygen, two ring nitrogens and two ring carbons.

**139** This subclass is indented under subclass 132. Compounds in which the five-membered hetero ring has ring nitrogens in the 1- and 3-positions and ring carbons in the remaining three positions.

**140** This subclass is indented under subclass 132. Compounds in which the five-membered hetero ring has ringnitrogens in the 1- 2- positions and ring carbons in the remaining three positions.

**141** This subclass is indented under subclass 111. Compounds in which the five-membered hetero ring consists of one ring nitrogen and four ring carbons.

**142** This subclass is indented under subclass 141. Compounds in which the five-membered hetero ring is one of the cyclos of a polycyclo ring system.

**143** This subclass is indented under subclass 142. Compounds in which the polycyclo ring system consists of exactly two rings.

**144** This subclass is indented under subclass 143. Compounds in which chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is bonded directly to the bicyclo ring system.

**145** This subclass is indented under subclass 106. Compounds having, in addition to the morpholine ring, a hetero ring which includes a ring sulfur.

**146** This subclass is indented under subclass 145. Compounds wherein the additional hetero ring consists of one ring sulfur and four ring carbons.

**147** This subclass is indented under subclass 106. Compounds having, in addition to the morpholine ring, a hetero ring which includes a ring oxygen.

**148** This subclass is indented under subclass 147. Compounds wherein the additional hetero ring contains at least two ring hetero atoms.

**149** This subclass is indented under subclass 147. Compounds wherein the additional hetero ring is six-membered.

**150** This subclass is indented under subclass 149. Compounds in which the additional hetero ring is a cyclo in a polycyclo ring system.

**151** This subclass is indented under subclass 150. Compounds in which the polycyclo ring system consists of exactly two rings.

**152** This subclass is indented under subclass 147. Compounds wherein the additional hetero ring is five-membered.

**153** This subclass is indented under subclass 152. Compounds in which the additional hetero ring is a cyclo in a polycyclo ring system.

**154** This subclass is indented under subclass 106. Compounds having a polycyclo ring system which contains at least three carbocyclic rings.

**155** This subclass is indented under subclass 154. Compounds in which the polycyclo ring system consists of exactly three six-membered carbocyclic rings.

**156** This subclass is indented under subclass 155. Compounds wherein the tricyclo ring system is part of an anthrone or anthraquinone nucleus, or a hydrogenated form thereof.

**157** This subclass is indented under subclass 100. Compounds wherein phosphorus is attached directly or indirectly to the morpholine ring by nonionic bonding.

**158** This subclass is indented under subclass 106. Compounds wherein sulfur is attached directly or indirectly to the morpholine ring by nonionic bonding.

**159** This subclass is indented under subclass 158. Compounds wherein nitrogen is attached directly or indirectly to the morpholine ring by nonionic bonding.

**160** This subclass is indented under subclass 159. Compounds wherein the sulfur is a double bonded divalent atom (=S).

**161** This subclass is indented under subclass 158. Compounds wherein the sulfur is a double bonded divalent atom (=S).

**162** This subclass is indented under subclass 106. Compounds wherein nitrogen is attached directly or indirectly to the morpholine ring by nonionic bonding.

**163** This subclass is indented under subclass 162. Compounds which contain the -C=N group.

**164** This subclass is indented under subclass 162. Compounds wherein nitrogen is attached directly to the morpholine ring by nonionic bonding.

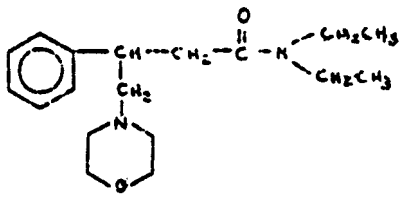
**165** This subclass is indented under subclass 162. Compounds wherein nitrogen is attached directly to a carbocyclic ring by nonionic bonding.

**166** This subclass is indented under subclass 165. Compounds wherein the morpholine ring is bonded directly to the carbocyclic ring.

**167** This subclass is indented under subclass 165. Compounds wherein the $-NO_2$ group is bonded directly to the carbocyclic ring.

**168** This subclass is indented under subclass 162. Compounds which contain a carbon atom to which acyclic nitrogen is bonded directly and to which oxygen is attached directly by a double bond.

(1) Note. This subclass provides for, interalia, carboxylic acid amides such as:

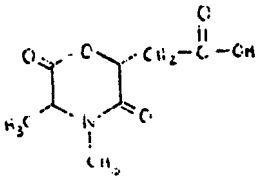


**169** This subclass is indented under subclass 168. Compounds in which the carbon atom is bonded directly to a ring in addition to being bonded to acyclic nitrogen and double bonded to oxygen.

**170** This subclass is indented under subclass 106. Compounds wherein oxygen is attached directly or indirectly to the morpholine ring by nonionic bonding.

**171** This subclass is indented under subclass 170. Compounds in which the oxygen is part of a O - group.

(1) Note. An example of a compound provided for herein is:



**172** This subclass is indented under subclass 171. Compounds wherein the carbon of the O - group is bonded directly to a ring.

**173** This subclass is indented under subclass 170. Compounds wherein oxygen is bonded directly to a ring.

**174** This subclass is indented under subclass 173. Compounds having the formula ROR', wherein R and R' are organic radicals, at least one of which is a ring.

**175** This subclass is indented under subclass 170. Compounds wherein the oxygen is double bonded directly to acyclic carbon.

SEE OR SEARCH THIS CLASS, SUBCLASS:

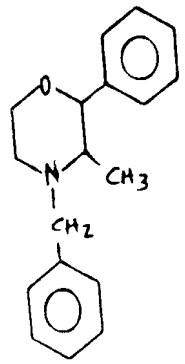
173+, for oxygen bonded directly to a ring carbon.

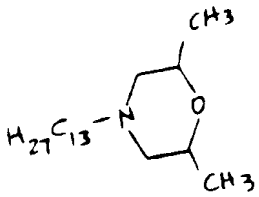
**176** This subclass is indented under subclass 175. Compounds wherein the acyclic carbon of the carbonyl group is bonded directly to the nitrogen of the morpholine ring.

**177** This subclass is indented under subclass 170. Compounds having the formula ROR', wherein R and R' are organic radicals, one which contains the morpholine ring.

**178** This subclass is indented under subclass 106. Compounds in which a hydrocarbon substituent is bonded directly to the nitrogen of the morpholine ring.

(1) Note. Example of compounds provided for herein are:

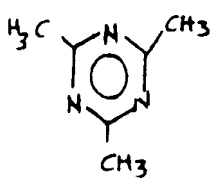


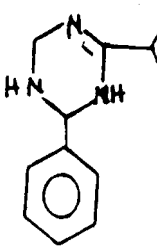


**179** This subclass is indented under subclass 1. Compounds in which the six-membered hetero ring consists of four ring nitrogens and two ring carbons.

**180** This subclass is indented under subclass 1. Compounds wherein the six-membered hetero ring consists of three ring nitrogens and three ring carbons.

(1) Note. This subclass contains, for example:





**181** This subclass is indented under subclass 180. Compounds which contain aluminum or a metal having a specific gravity greater than 4.

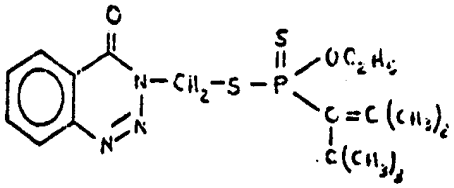
(1) Note. Arsenic is considered a metal for the purposes of this subclass.

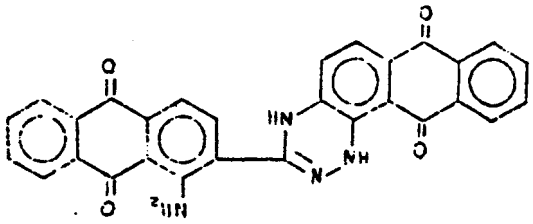
**182** This subclass is indented under subclass 180. Compounds in which two of the ring nitrogens of the six-membered hetero ring are bonded directly to each other.

(1) Note. Examples of compounds provided for herein are 1, 2, 3-triazine, often designated as vicinal triazine, and 1, 2, 4-triazine.

**183** This subclass is indented under subclass 182. Compounds wherein the asymmetrical six-membered hetero ring is a cyclo in a polycyclo ring system.

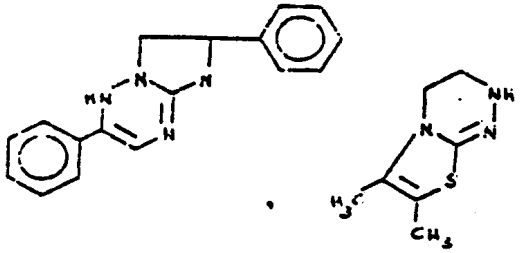
(1) Note. Two examples of compounds provided for herein are illustrated below:

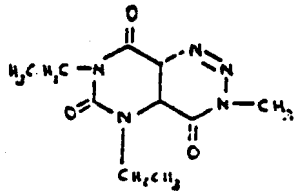




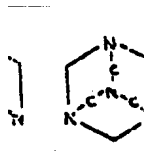
**184** This subclass is indented under subclass 183. Compounds wherein the polycyclo ring system contains a ring hetero atom in addition to the three ring nitrogens in the six-membered hetero ring.

(1) Note. Two examples of compounds provided for in this subclass are:





**185** This subclass is indented under subclass 180. Compounds having the following basic structure and derivatives thereof wherein the hexamethylene tetramine ring system is not destroyed.

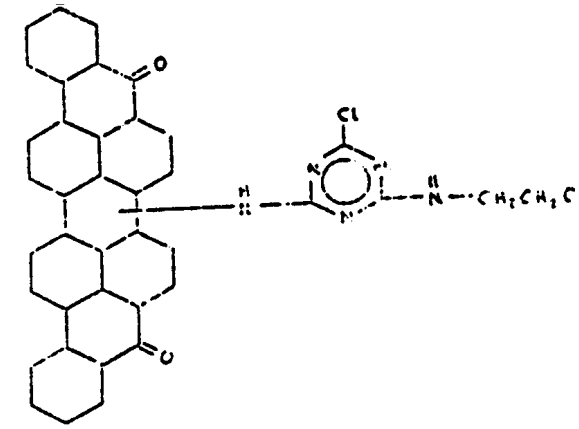


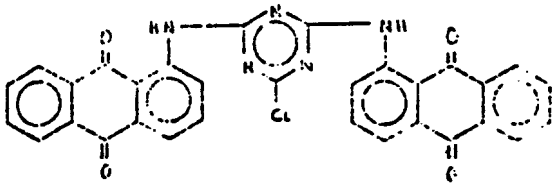
**186** This subclass is indented under subclass 185. Processes in which hexamethylene tetramine or derivatives thereof are produced, separated from impurities or separated from the reaction mixture.

**187** This subclass is indented under subclass 180. Compounds which contain anthrone or anthraquinone.

(1) Note. The anthrone or anthraquinone ring system may be three cyclos of a polycyclo ring system having more than three cyclos.

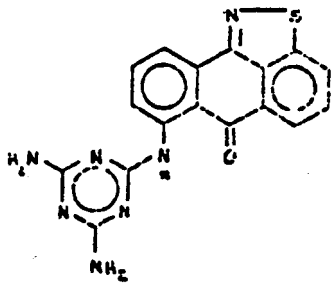
(2) Note. Two examples of compounds provided for herein are:





**188** This subclass is indented under subclass 187. Compounds wherein anthrone or anthraquinone is part of a polycyclo ring system which contains at least one hetero ring.

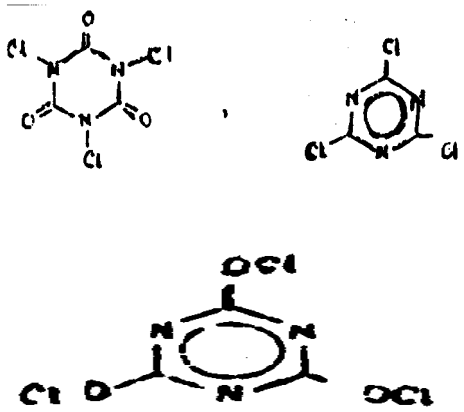
(1) Note. An example of a compound provided for herein is:



**189** This subclass is indented under subclass 187. Compounds which contain sulfur.

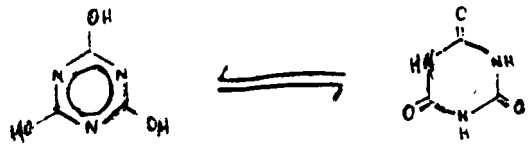
**190** This subclass is indented under subclass 180. Compounds which are chlorinated derivatives of cyanuric or isocyanuric acid, and salts thereof.

(1) Note. Examples of compounds provided for herein are:



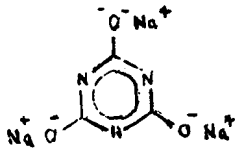
**191** This subclass is indented under subclass 190. Processes for the production of cyanuric chloride or a dichloro-iso-cyanuric acid salt which utilize cyanogen chloride as a (N = C- C1) reactant.

**192** This subclass is indented under subclass 180. Compounds termed cyanuric acid, which exists in two forms as shown by the equilibrium.



'normal' cyanuric acid isocyanuric acid and salts thereof.

(1) Note. An example of a salt provided for herein is:

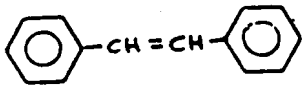


**193** This subclass is indented under subclass 180. Processes wherein the six-membered hetero ring is formed by a trimerization reaction of a monomer.

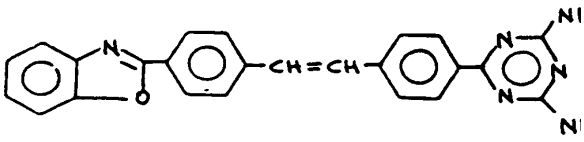
(1) Note. This subclass provides for homotrimerization processes only. Compounds produced by reactions other than homopolymerizations are classified with the product.

(2) Note. Examples of monomers employed in the trimerization reaction are isocyanates and nitriles.

**193.1** This subclass is indented under subclass 180. Stilbene containing:Compounds which contains the group, illustrated below, wherein only hydrogen may be replaced.

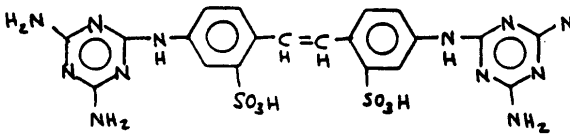


(1) Note. An example of a compound provided for herein is:



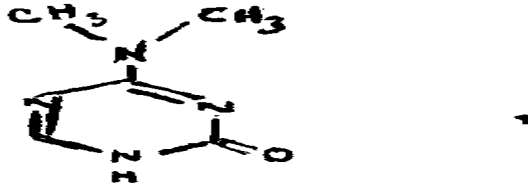
**193.2 Plural triazine rings containing:**
Compounds under subclss 193.1 which contain at least two triazine rings.

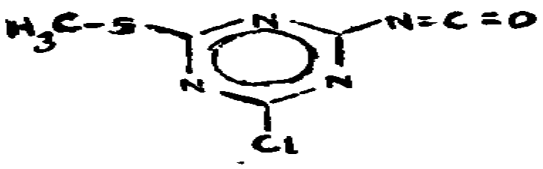
(1) Note. An example of a compound provided for herein is:



**194** This subclass is indented under subclass 180. Compounds wherein nitrogen, in addition to the three ring nitrogens, is bonded directly to a ring carbon of the six-membered hetero ring.

(1) Note. This subclass provides for compounds such as:





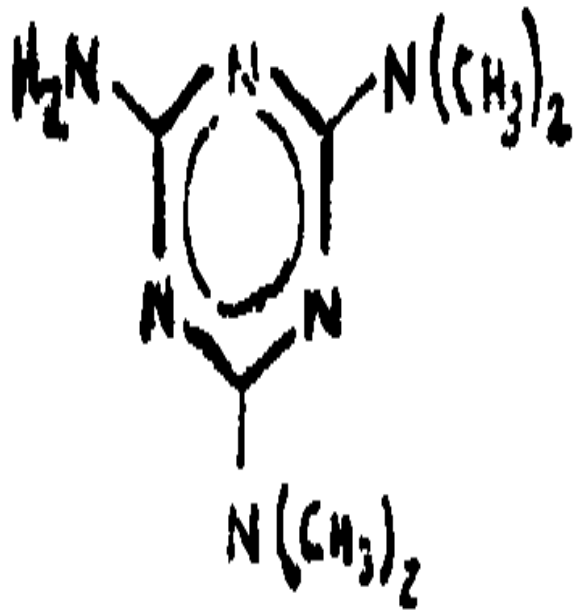
(2) Note. Ammelide is provided for here.

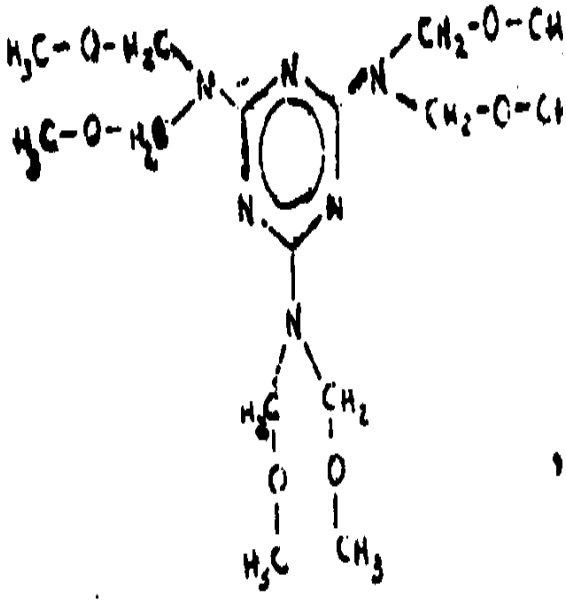
SEE OR SEARCH THIS CLASS, SUBCLASS:
182+, for all asmmetrical triazine rings, regardless of substitution.

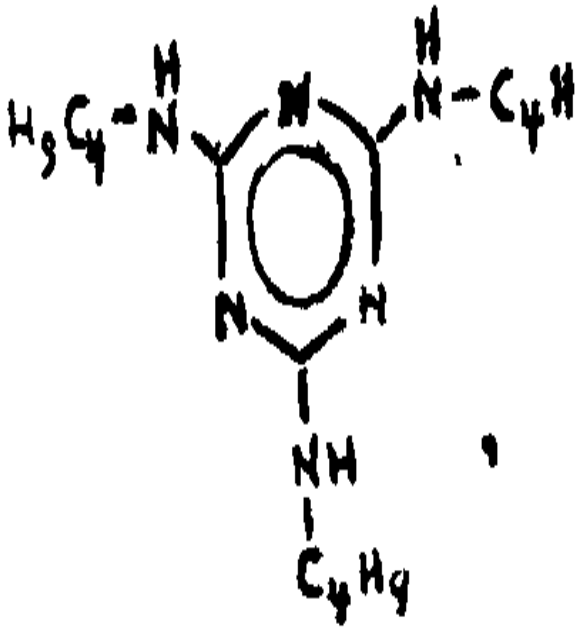
**195** This subclass is indented under subclass 194. Compounds which contain phosphorus.

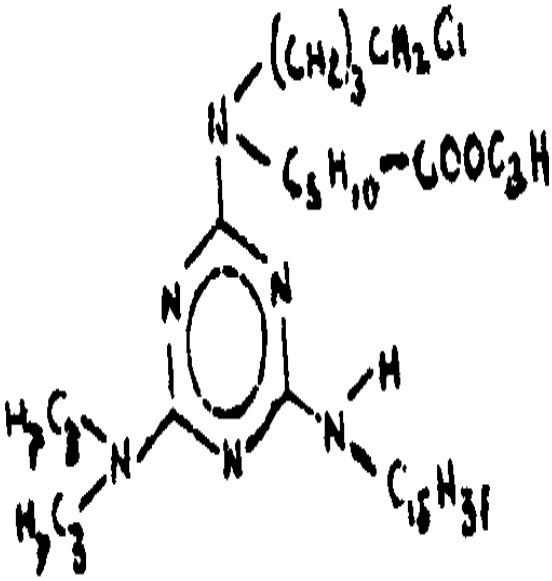
**196** This subclass is indented under subclass 194. Compounds wherein nitrogen, other than the three ring nitrogens, is bonded directly to each of the three ring carbons of the six-membered hetero ring.

(1) Note. This subclass contains, for example, substituted melamines.



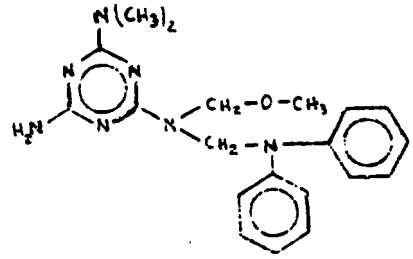


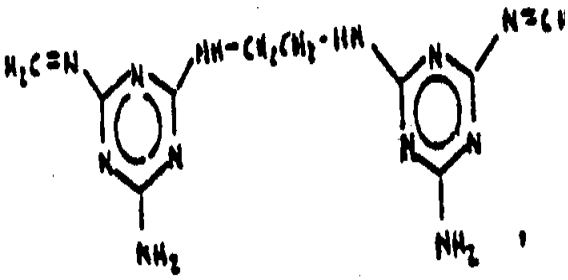


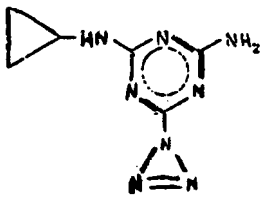


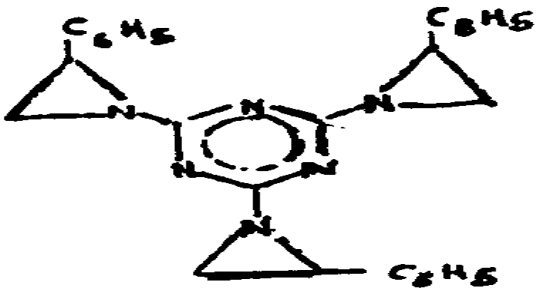
**197** This subclass is indented under subclass 196. Compounds in which there is a ring addition to the six-membered hetero ring.

(1) Note. Two examples of compounds provided for in this subclass are:

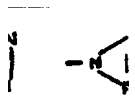








(2) Note. The azide ring below is frequently illustrated as $-N_3$. It should be considered a nitrocyclic ring but not a hetero-cyclic ring.

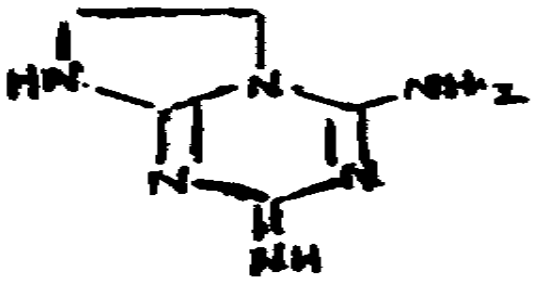


**198** This subclass is indented under subclass 197. Compounds in which the additional ring is a hetero ring.

(1) Note. The additional hetero ring may be another triazine ring.

(2) Note. There must be at least four ring hetero atoms in the molecule to be classified here.

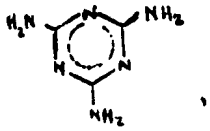
(3) Note. Examples of compounds provided for herein are:



(4) Note. Melem, melam and melon are provided for herein.

**199** This subclass is indented under subclass 196. Compounds which contain a halogen or sulfur.

**200** This subclass is indented under subclass 196. Compounds having the structure below or salts thereof.



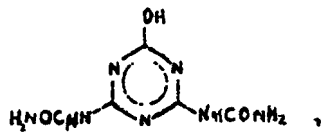
**201** This subclass is indented under subclass 200. Processes wherein melamine is produced from urea or biuret.

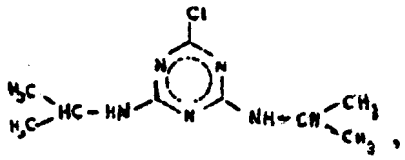
**202** This subclass is indented under subclass 200. Processes wherein melamine is produced from cyanamide or dicyanamide.

**203** This subclass is indented under subclass 200. Processes wherein melamine is separated from impurities or from the reaction mixture.

**204** This subclass is indented under subclass 194. Compounds wherein nitrogen, other than the three ring nitrogens, is bonded directly to two of the three ring carbons of the six-membered hetero ring.

(1) Note. This subclass contains, for example:





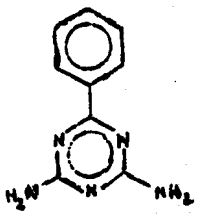
**205** This subclass is indented under subclass 204. Compounds wherein hydrogen or carbon is bonded directly to the remaining ring carbon of the six-membered hetero ring.

(1) Note. Examples of compounds provided for in this subclass are:

formo-guanamine acceto-guanamine

**206** This subclass is indented under subclass 205. Compounds which contain a ring in addition to the six-membered hetero ring.

(1) Note. This subclass provides for benzo-guanamine, for example:



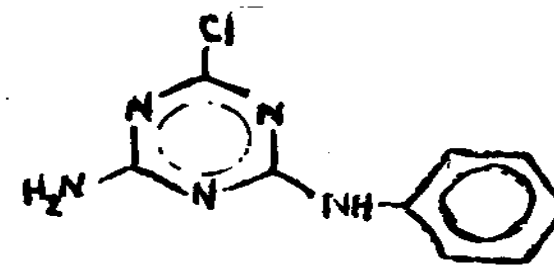
**207** This subclass is indented under subclass 206. Compounds wherein the additional ring is a hetero ring.

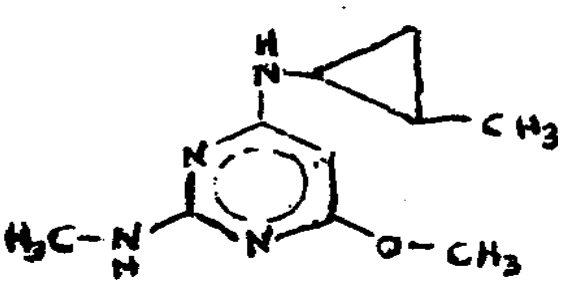
(1) Note. This subclass contains, for example, diguanamines.

(2) Note. There must be at least four ring hetero atoms in the molecule to be classified here.

**208** This subclass is indented under subclass 204. Compounds which contain a ring in addition to the six-membered hetero ring.

(1) Note. Two examples of compounds provided for herein are:





**209** This subclass is indented under subclass 208. Compounds wherein the additional ring is a hetero ring.

(1) Note. The additional hetero ring may be another triazine ring.

(2) Note. There must be at least four ring hetero atoms in the molecule to be classified here.

**210** This subclass is indented under subclass 204. Compounds which contain sulfur.

**211** This subclass is indented under subclass 194. Compounds which contain a ring in addition to the six-membered hetero ring.

**212** This subclass is indented under subclass 211. Compounds in which the additional ring is a hetero ring.

(1) Note. There must be at least four ring hetero atoms in the molecule to be classified here.

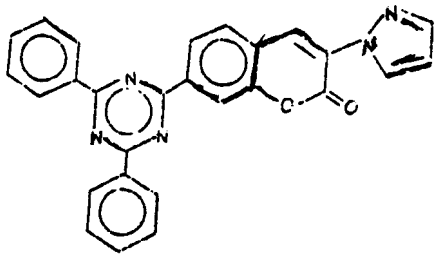
**213** This subclass is indented under subclass 194. Compounds which contain sulfur.

**214** This subclass is indented under subclass 180. Compounds which contain phosphorus.

**215** This subclass is indented under subclass 180. Compounds having a substituent containing chalcogen (i.e., oxygen, sulfur, selenium or tellurium) or halogen bonded directly or indirectly to the six-membered hetero ring.

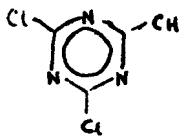
**216** This subclass is indented under subclass 215. Compounds wherein the chalcogen (i.e., oxygen, sulfur, selenium or tellurium) or halogen containing substituent is bonded to a ring carbon of the six-membered hetero ring.

(1) Note. This subclass provides for compounds such as:



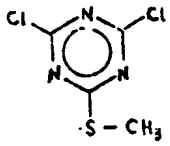
**217** This subclass is indented under subclass 216. Compounds wherein a halogen is bonded directly to a ring carbon of the six-membered hetero ring.

(1) Note. This subclass provides for compounds such as:



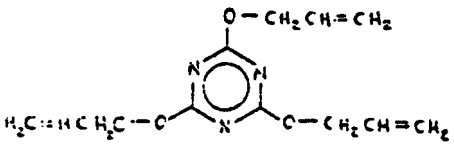
**218** This subclass is indented under subclass 217. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is bonded directly to a ring carbon of the six-membered hetero ring.

(1) Note. An example of a compound included herein is :



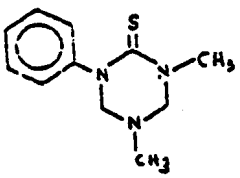
**219** This subclass is indented under subclass 216. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, tellurium) is bonded directly to a ring carbon of the six-membered hetero ring.

(1) Note. This subclass provides for compounds such as:



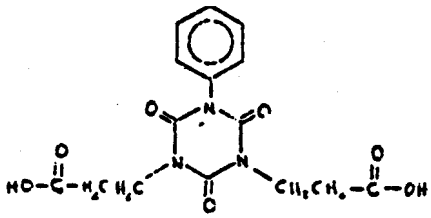
**220** This subclass is indented under subclass 219. Compounds wherein divalent chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is double bonded directly to a ring carbon of the six-membered hetero ring.

(1) Note. An example of a compound provided for herein is:



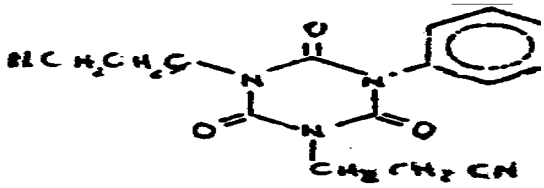
**221** This subclass is indented under subclass 220. Compounds wherein divalent chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is double bonded directly to each of the ring carbons of the six-membered hetero ring.

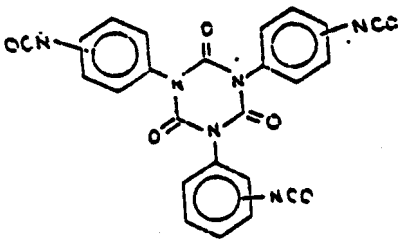
(1) Note. An example of a compound provided for herein is:



**222** This subclass is indented under subclass 221. Compounds which contain nitrogen in a substituent.

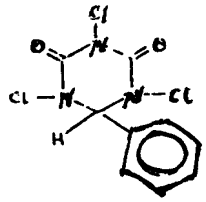
(1) Note. This subclass provides for compounds such as the two illustrated below:

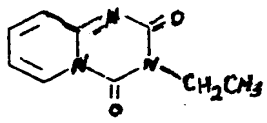




**223** This subclass is indented under subclass 200. Compounds wherein divalent chalcogen (i.e., oxygen, sulfur, selenium or tellurium) is double bonded directly to two of the ring carbons of the six-membered hetero ring.

(1) Note. This subclass provides for compounds such as the two illustrated below:





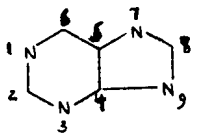
**224 The six-membered hetero ring consists of two nitrogens and four carbons (e.g., 1,2-diazines, etc.):**
This subclass is indented under subclass 1. Compounds in which the six-membered hetero ring consists of two ring nitrogens and four ring carbons.

**225 Heavy metal or aluminum containing:**
This subclass is indented under subclass 224. Compounds which contain aluminum or a metal with a specific gravity greater than 4.

**226 Arsenic or zinc containing:**
This subclass is indented under subclass 225. Compounds which contain arsenic or zinc.

**227 Mercury containing:**
This subclass is indented under subclass 225. Compounds which contain mercury.

**228 Purine containing (including hydrogenated):**
This subclass is indented under subclass 227. Compounds which contain a purine nucleus of the following basic structure in which the bonds between ring members may be single or double bonds.



**229 Boron or silicon containing:**
This subclass is indented under subclass 224. Compounds which contain boron or silicon.

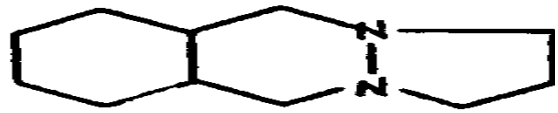
**230 Spiro:**
This subclass is indented under subclass 224. Compounds which contain a spiro ring system.

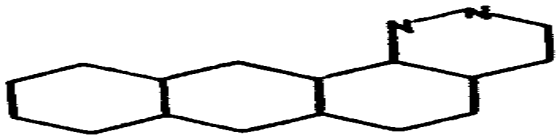
**231 Spiro diazine:**
This subclass is indented under subclass 230. Compounds wherein at least one of the rings in the spiro ring system is a six-membered hetero ring consisting of two nitrogens and four carbons.

**232 Phosphorus attached directly or indirectly to a 1,2-diazine ring by nonionic bonding:**
This subclass is indented under subclass 224. Compounds wherein phosphorus is attached directly or indirectly by nonionic bonding to the six-membered hetero ring which has the two ring nitrogens in the 1- and 2-positions.

**233 Polycyclo ring system having a 1,2-diazine ring as one of the cyclos:**
This subclass is indented under subclass 224. Compounds wherein the six-membered hetero ring has the two ring nitrogens in the 1- and 2-positions and is a cyclo in a polycyclo ring system.

(1) Note. A diazine ring in a polycyclo ring system is numbered as if it were a single ring and not part of a ring system. Therefore, the diazine ring is considered 1,2-diazine in each of the following:



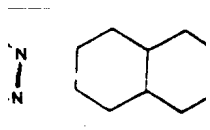


**234 Tricyclo ring system having the 1,2-diazine ring as one of the cyclos:**
This subclass is indented under subclass 233. Compounds wherein the polycyclo ring system consists of three rings.

**235** **Bicyclo ring system having the 1,2-diazine ring as one of the cyclos:**
This subclass is indented under subclass 233. Compounds wherein the polycyclo ring system consists of two rings.

**236** **At least three ring nitrogens in the bicyclo ring system:**
This subclass is indented under subclass 235. Compounds wherein the bicyclo ring system includes at least one ring nitrogen in addition to the two ring nitrogens of the six-membered hetero ring.

**237** **Phthalazines (including hydrogenated):**
This subclass is indented under subclass 235. Compounds wherein the bicyclo ring system has the following basic structure in which the bonds between ring members may be single or double bonds.:

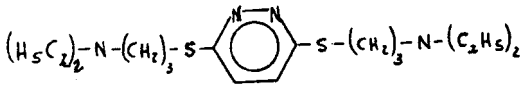


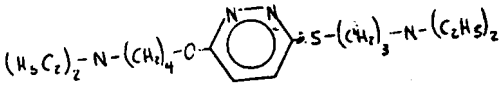
**238** **1,2-diazines which contain an additional hetero ring:**
This subclass is indented under subclass 224. Compounds wherein the six-membered hetero ring has the two ring nitrogens in the 1-and 2-positions and which contain an additional hetero ring.

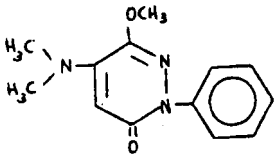
**239** **Chalcogen bonded directly to ring carbon of a 1,2-diazine ring:**
This subclass is indented under subclass 224. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the six-membered hetero ring which has the two ring nitrogens in the 1- and 2-positions.

**240** **Plural chalcogens bonded directly:**
This subclass is indented under subclass 239. Compounds wherein at least two chalcogen atoms are bonded directly to the six-membered hetero ring.

(1) Note. Examples of compounds provided for herein are:



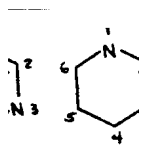




**241** **Halogen attached directly to the 1,2-diazine ring by nonionic bonding:**
This subclass is indented under subclass 239. Compounds wherein halogen is attached directly to the six-membered hetero ring by nonionic bonding.

**242** **1,3-diazines:**
This subclass is indented under subclass 224. Compounds wherein the six-membered hetero ring has nitrogens in the 1- and 3-positions, and carbons in the remaining four positions.

(1) Note. The following shows the position numbering used for 1,3-diazines:



**243** **Phosphorus attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 242. Compounds wherein phosphorus is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

**244** **Polycyclo ring system having the diazine ring as one of the cyclos:**
This subclass is indented under subclass 243. Compounds wherein the six-membered hetero ring is one of the cyclos in a polycyclo ring system.

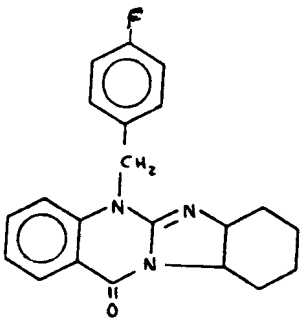
**245** **Polycyclo ring system having the diazine ring as one of the cyclos:**
This subclass is indented under subclass 242. Compounds wherein the six-membered hetero ring is one of the cyclos in a polycyclo ring system.

(1) Note. The positions of the six-membered hetero ring are numbered as if it were monocyclic when it is part of a polycyclo ring system.

**246** **Tetracyclo ring system having the diazine ring as one of the cyclos:**
This subclass is indented under subclass 245. Compounds wherein the polycyclo ring system consists of four rings.

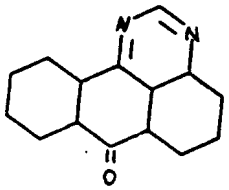
**247** **Three or more ring hetero atoms in the tetracyclo ring system:**
This subclass is indented under subclass 246. Compounds wherein the tetracyclo ring system includes at least one ring hetero atom in addition to the two ring nitrogens of the six-membered hetero ring.

(1) Note. An example of a compound provided for herein is:




**248** **Ring carbon is shared by three of the cyclos (e.g., anthrapyrimidine, etc.):**
This subclass is indented under subclass 246. Compounds wherein three of the cyclos of the tetracyclo ring system have a ring carbon which is common to each of them.

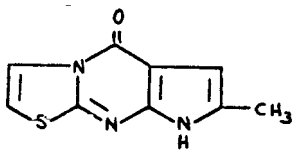
(1) Note. An example of a compound provided for herein is:




**249** **Tricyclo ring system having the diazine ring as one of the cyclos:**
This subclass is indented under subclass 245. Compounds wherein the polycyclo ring system consists of three rings.

**250** **Three or more ring hetero atoms in the tricyclo ring system:**
This subclass is indented under subclass 249. Compounds wherein the tricyclo ring system includes at least one ring hetero atom in addition to the two ring nitrogens of the six-membered hetero ring.

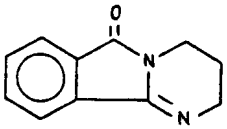
(1) Note. An example of a compound provided for herein is:




**251** **Four or more ring nitrogens in the tricyclo ring system:**
This subclass is indented under subclass 250. Compounds wherein the tricyclo ring system includes at least two ring nitrogens in addition to the two ring nitrogens of the six-membered hetero ring.

**252 Ring nitrogen is shared by two of the cyclos:**
This subclass is indented under subclass 249. Compounds in which a ring nitrogen is a member of two of the rings in the tricyclo ring system.

(1) Note. An example of a compound provided for herein is:



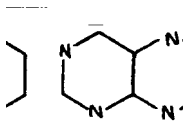
**253 Bicyclo ring system having the diazine ring as one of the cyclos:**
This subclass is indented under subclass 245. Compounds in which the polycyclo ring system consists of two rings.

**254 At least five ring hetero atoms in the bicyclo ring system:**
This subclass is indented under subclass 253. Compounds wherein the bicyclo ring system includes at least three ring hetero atoms in addition to the two ring nitrogens of the six-membered hetero ring.

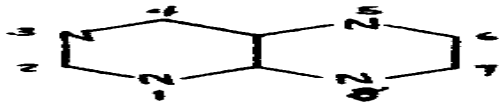
**255 Four ring hetero atoms in the bicyclo ring system:**
This subclass is indented under subclass 253. Compounds wherein the bicyclo ring system includes two ring hetero atoms in addition to the two ring nitrogens of the six-membered hetero ring.

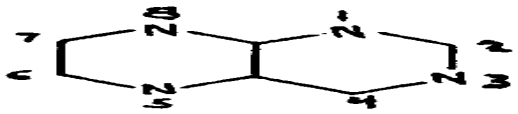
**256 Four ring nitrogens in the bicyclo ring system:**
This subclass is indented under subclass 255. Compounds wherein the bicyclo ring system contains four ring nitrogens.

**257 Pterdines (including hydrogenated):**
This subclass is indented under subclass 256. Compounds wherein the bicyclo ring system has the following basic structure in which the bonds between ring members may be single or double bonds.:



(1) Note. The following shows the position numbering used for pteridines:



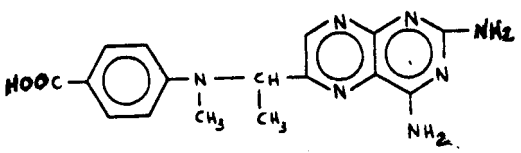


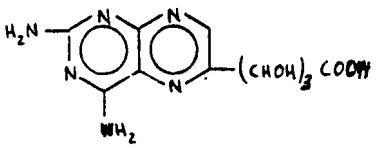
**258 Nitrogen bonded directly to the pteridine ring system:**
This subclass is indented under subclass 257. Compounds wherein nitrogen is bonded directly to the pteridine ring system.

**259 Plural nitrogens bonded directly to the pteridine ring system:**
This subclass is indented under subclass 258. Compounds wherein two or more nitrogen atoms are bonded directly to the pteridine ring system.

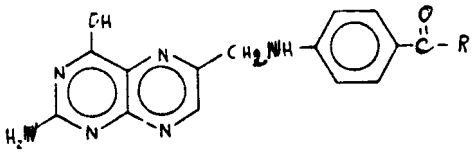
**260 At 2- and 4-positions:**
This subclass is indented under subclass 259. Compounds wherein nitrogen atoms are bonded directly to the 2- and 4-position carbons of the pteridine ring system.

(1) Note. Examples of compounds provided for herein are:

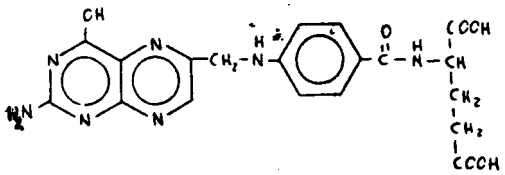


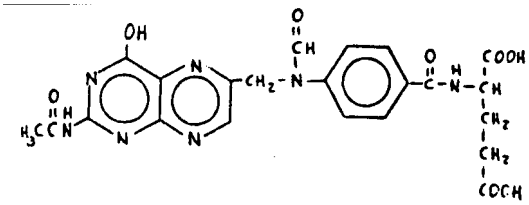


**261 Pteroyl per se or having -C(=X)-, wherein X is chalcogen, bonded directly to acyclic nitrogen of otherwise unsubstituted pteroyl:**
This subclass is indented under subclass 258. Compounds which contain the structure, per se, wherein R is a radical; and derivatives thereof wherein one or more of the hydrogens attached to the acyclic nitrogens shown in the structure is replaced by , in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), and no other substitution is made in the structure shown.



(1) Note. Examples of compounds provided for herein are:



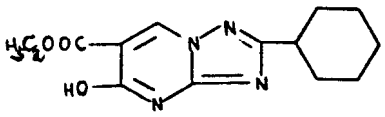


SEE OR SEARCH THIS CLASS, SUBCLASS:
258, for hydropteroyl derivatives.

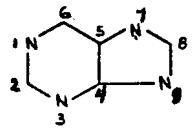
**262 The other cyclo in the bicyclo ring system is five-membered:**
This subclass is indented under subclass 256. Compounds wherein a five-membered ring is the other cyclo of the bicyclo ring system.

**263 Ring nitrogen is shared by the two cyclos:**
This subclass is indented under subclass 262. Compounds in which a ring nitrogen is a member of both of the rings in the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



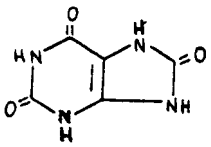
**264 Purines (including hydrogenated):**
This subclass is indented under subclass 262. Compounds wherein the bicyclo ring system has the following basic structure, in which the bonds between ring members may be single or double bonds:

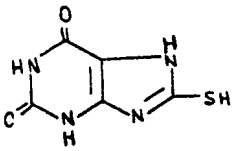


**265 Chalcogen bonded directly to ring carbon of the purine ring system:**
This subclass is indented under subclass 264. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the purine ring system.

**266 At 2-, 6-, and 8-positions:**
This subclass is indented under subclass 265. Compounds wherein chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to the 2-, 6-, and 8-positions of the purine ring system.

(1) Note. Examples of compounds provided for herein are:

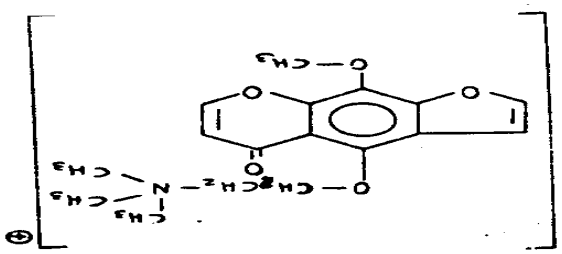


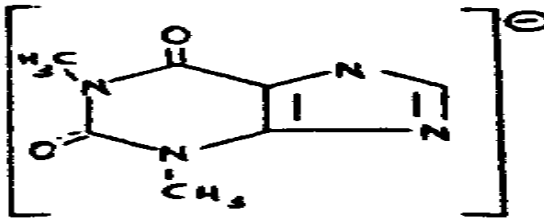


**267** **At 2- and 6- positions (e.g., theophyllines etc.):**
This subclass is indented under subclass 265. Compounds wherein chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to the 2- and 6- positions of the purine ring system.

**268** **Additional polycyclo ring system, which is not another purine, having a hetero ring as one of the cyclos:**
This subclass is indented under subclass 267. Compounds which contain a nonpurine polycyclo ring system, having a hetero ring as one of the cyclos, in addition to the purine ring system.

(1) Note. An example of a compound provided for herein is:

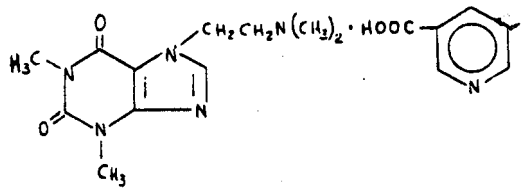


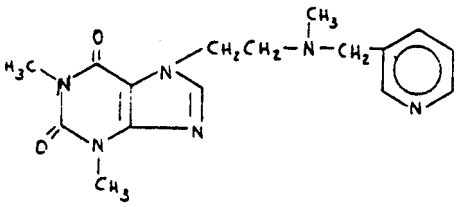


**269** **Additional hetero ring which is unsaturated and is not one of the cyclos of a purine ring system:**
This subclass is indented under subclass 267. Compounds having, in addition to the purine ring system, a hetero ring which has at least one double bond between ring members.

(1) Note. The additional hetero ring may not be a cyclo in any additional purine ring system.

(2) Note. Examples of compounds provided for herein are:



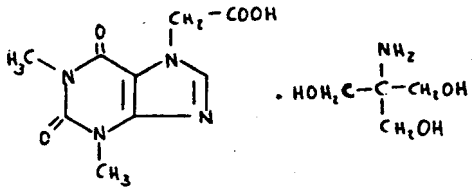


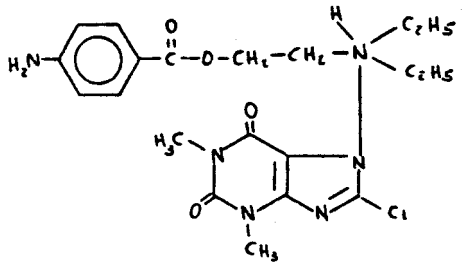
**270** **Plural ring nitrogens in the additional hetero ring:**
This subclass is indented under subclass 269. Compounds wherein the additional hetero ring contains at least two ring nitrogens.

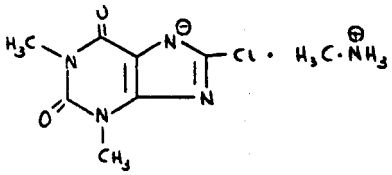
**271** **Having -C(=X)-, wherein X is chalcogen, attached directly or indirectly to the purine ring system by nonionic bonding or halogen**

**bonded directly at 8-position (e.g., theophylline acetate, 8-chlorotheophylline, etc.):**
This subclass is indented under subclass 267. Compounds wherein either a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is attached directly or indirectly to the purine ring system by nonionic bonding, or a halogen is bonded directly to the 8-position of the purine ring system.

(1) Note. Examples of compounds provided for herein are:



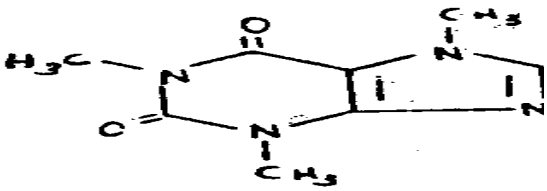


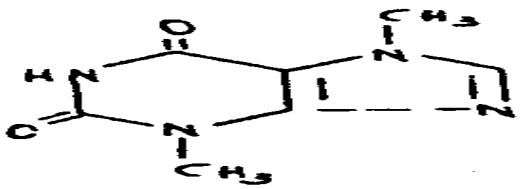


**272** **Nitrogen attached directly or indirectly to the purine ring system by nonionic bonding:**
This subclass is indented under subclass 267. Compounds wherein nitrogen is attached directly or indirectly to the purine ring system by nonionic bonding.

**273** **Positions other than 2- and 6- are unsubstituted or hydrocarbyl substituted only (e.g., theophylline, etc.):**
This subclass is indented under subclass 267. Compounds wherein the purine ring system, at positions other than 2- and 6-, is unsubstituted or substituted by hydrocarbon radicals only.

**274** **Caffeine per se, theobromine per se, or salt thereof:**
This subclass is indented under subclass 273. Compounds which have one of the following structures or salts thereof.





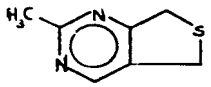
**275** **Recovery from natural or waste materials:**
This subclass is indented under subclass 274. Compounds wherein caffeine, theobromine, or a salt thereof, is separated from impurities or from a reaction mixture.

**276** **Nitrogen attached directly or indirectly to the purine ring system by nonionic bonding:**
This subclass is indented under subclass 265. Compounds wherein nitrogen is attached directly or indirectly to the purine ring system by nonionic bonding.

**277** **Nitrogen attached directly or indirectly to the purine ring system by nonionic bonding:**
This subclass is indented under subclass 264. Compounds wherein nitrogen is attached directly or indirectly to the purine ring system by nonionic bonding.

**278** **Three ring hetero atoms in the bicyclo ring system:**
This subclass is indented under subclass 253. Compounds wherein the bicyclo ring system includes a ring hetero atom in addition to the two ring nitrogens of the six-membered hetero ring.

(1) Note. An example of a compound provided for herein is:

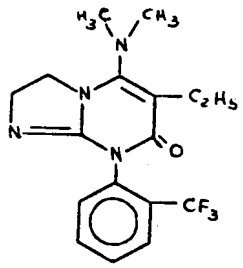


**279** **Three ring nitrogens in the bicyclo ring system:**
This subclass is indented under subclass 278. Compounds wherein the bicyclo ring system contains three ring nitrogens.

**280** **The other cyclo in the bicyclo ring system is five-membered:**
This subclass is indented under subclass 279. Compounds wherein a five-membered ring is the other cyclo of the bicyclo ring system.

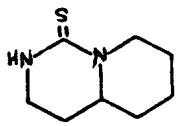
**281** **Ring nitrogen is shared by the two cyclos:**
This subclass is indented under subclass 280. Compounds in which a ring nitrogen is a member of both of the rings in the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



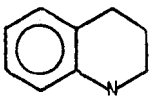
**282** **Ring nitrogen is shared by the two cyclos:**
This subclass is indented under subclass 253. Compounds in which a ring nitrogen is a member of both of the rings in the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



**283** **The other cyclo in the bicyclo ring system is a benzene ring (e.g., quinazoline, etc.):**
This subclass is indented under subclass 253. Compounds wherein the bicyclo ring system consists of a benzene ring and the six-membered hetero ring.

(1) Note. The following structure shows the numbering system for the ring members. The bonding between ring members of the hetero ring may be double or single but the other ring must be benzene.



SEE OR SEARCH THIS CLASS, SUBCLASS:

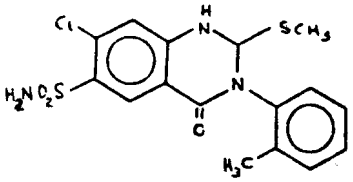
253, for "benzopyrimidine" derivatives in which one or more of the double bonds in the "benzo portion" is or are hydrogenated.

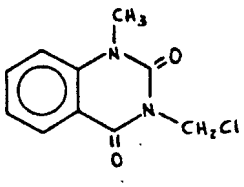
**284** **Additional unsaturated hetero ring having at least nitrogen as a ring hetero atom:**
This subclass is indented under subclass 283. Compounds having, in addition to the bicyclo ring system, a hetero ring which has at least one double bond between ring members and at least one ring nitrogen.

**285 Chalcogen bonded directly at 2- and 4- positions:**

This subclass is indented under subclass 283. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly at the 2- and 4- positions of the bicyclo ring system.

(1) Note. Examples of compounds provided for herein are:





**286 Chalcogen bonded directly at 2-position:**

This subclass is indented under subclass 283. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly at the 2-position of the bicyclo ring system.

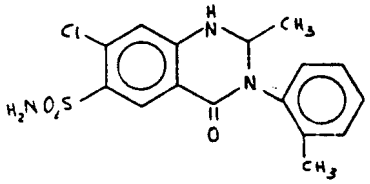
**287 Chalcogen bonded directly at 4-position:**

This subclass is indented under subclass 283. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly at the 4-position of the bicyclo ring system.

**288 Sulfur bonded directly at 6- position:**

This subclass is indented under subclass 287. Compounds wherein sulfur is bonded directly at the 6-position of the bicyclo ring system.

(1) Note. An example of a compound provided for herein is:



**289 Carbocyclic ring bonded directly at 2-position:**

This subclass is indented under subclass 287. Compounds wherein a carbocyclic ring is bonded directly at the 2-position of the bicyclo ring system.

**290 Carbocyclic ring bonded directly at 3-position:**

This subclass is indented under subclass 287. Compounds wherein a carbocyclic ring is bonded directly at the 3-position of the bicyclo ring system.

**291 Nitrogen bonded directly at 2- and 4- positions:**

This subclass is indented under subclass 283. Compounds wherein nitrogens are bonded directly at the 2- and 4-positions of the bicyclo ring system.

**292 Nitrogen bonded directly at 2-position:**

This subclass is indented under subclass 283. Compounds wherein nitrogen is bonded directly at the 2-position of the bicyclo ring system.

**293 Nitrogen bonded directly at 4-position:**

This subclass is indented under subclass 283. Compounds wherein nitrogen is bonded directly at the 4-position of the bicyclo ring system.

**294 Polycyclo-carbocyclic ring system having at least three cyclos:**

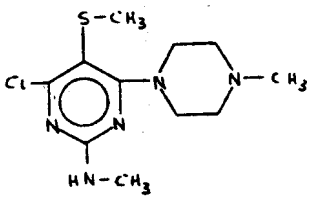
This subclass is indented under subclass 242. Compounds having a polycyclo ring system which contains at least three carbocyclic rings.

**295 Plural diazine rings:**

This subclass is indented under subclass 242. Compounds which contain at least two of the six-membered hetero rings, each having ring

nitrogens in the 1- and 4-positions, and carbons in the remaining four positions.

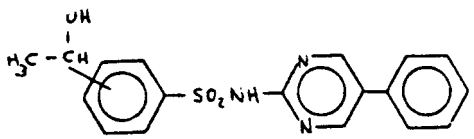
(1) Note. An example of a compound provided for herein is:



**296 Plural 1, 3-diazine rings:**
This subclass is indented under subclass 295. Compounds which contain at least two of the six-membered hetero rings, each having its nitrogens in the 1- and 3- positions, and carbons in the remaining four positions.

**297 Nitrogen attached directly at 2-position by nonionic bonding and sulfur bonded directly to the nitrogen:**
This subclass is indented under subclass 242. Compounds which include nitrogen attached directly at the 2-position of the six-membered hetero ring by nonionic bonding and sulfur bonded directly to the nitrogen which is at the 2-position.

(1) Note. An example of a compound provided for herein is:



**298 Chalcogen bonded directly to diazine ring carbon:**
This subclass is indented under subclass 242. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the six-membered hetero ring.

**299 At 2-, 4-, and 6-positions (e.g., barbituric acid, etc.):**
This subclass is indented under subclass 298. Compounds wherein chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly at the 2-, 4-, and 6-positions of the six-membered hetero ring.

**300 Additional hetero ring which is unsaturated:**
This subclass is indented under subclass 299. Compounds having, in addition to the six-membered hetero ring, a hetero ring which has at least one double bond between ring members.

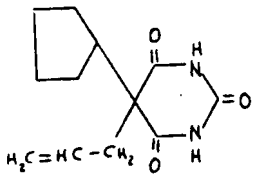
**301 Nitrogen attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 299. Compounds wherein nitrogen is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

**302 Additional chalcogen attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 299. Compounds wherein an additional chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

**303 Halogen attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 299. Compounds wherein halogen is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

**304 Alicyclic ring attached directly or indirectly to the diaziane ring by nonionic bonding:**
This subclass is indented under subclass 299. Compounds wherein an alicyclic ring is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

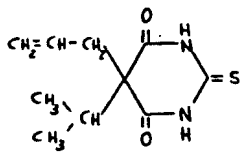
(1) Note. An example of a compound provided for herein is:



**305** **Phenyl bonded directly at 5-position:**
This subclass is indented under subclass 299. Compounds wherein a univalent radical derived from benzene by removal of one hydrogen is bonded directly at the 5-position of the six-membered hetero ring.

**306** **Acyclic ethylenic or acetylenic unsaturation containing:**
This subclass is indented under subclass 299. Compounds which contain ethylenic or acetylenic unsaturation which is not between ring members of a ring.

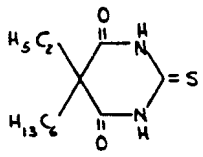
(1) Note. An example of a compound provided for herein is:



**307** **Plural alkyl groups bonded directly at 5-position:**
This subclass is indented under subclass 299. Compounds wherein at least two alkyl groups are bonded directly to the 5-position of the six-membered hetero ring.

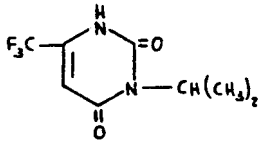
**308** **Plural diverse alkly groups bonded directly at 5-position:**
This subclass is indented under subclass 307. Compounds wherein at least two different alkyl groups are bonded directly to the 5-position of the six-membered hetero ring.

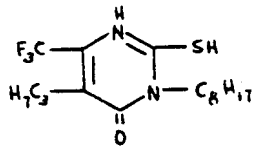
(1) Note. An example of a compound provided for herein is:



**309** **At 2-position and a 4- or 6-position:**
This subclass is indented under subclass 298. Compounds wherein chalcogens (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to the 2-position and to the 4- or 6-position of the six-membered hetero ring.

(1) Note. Examples of compounds provided for herein are:





**310** **Additional hetero ring which is unsaturated:**
This subclass is indented under subclass 309. Compounds having, in addition to the six-membered hetero ring, a hetero ring which has at least one double bond between ring members.

**311** **Nitrogen attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 309. Compounds wherein nitrogen is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

**312** **5-position is unsubstituted or alkyl substituted only:**
This subclass is indented under subclass 311. Compounds wherein the 5-position of the six-membered hetero ring is unsubstituted or substituted by alkyl radicals only.

**313 Halogen attached directly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 309. Compounds wherein halogen is attached directly to the six-membered hetero ring by nonionic bonding.

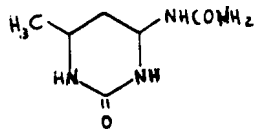
**314 Additional chalcogen attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 309. Compounds wherein an additional chalcogen, (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

**315 At 2-position:**
This subclass is indented under subclass 298. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly at the 2-position of the six-membered hetero ring.

**316 Nitrogen attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 315. Compounds wherein nitrogen is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

**317 The nitrogen is bonded directly at 4- or 6-position:**
This subclass is indented under subclass 316. Compounds wherein the nitrogen is bonded directly to the 4- or 6- position of the six-membered hetero ring.

(1) Note. An example of a compound provided for herein is:




**318 Additional chalcogen attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 315. Compounds wherein an additional chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

**319 At 4- or 6-position:**
This subclass is indented under subclass 298. Compounds wherein the chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly at the 4- or 6-position of the six-membered hetero ring.

**320 Nitrogen attached directly at 2-position by nonionic bonding:**
This subclass is indented under subclass 319. Compounds wherein nitrogen is attached directly to the 2-position of the six-membered hetero ring by nonionic bonding.

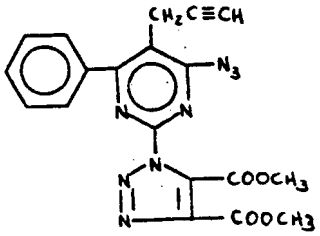
**321 Carbocyclic ring containing:**
This subclass is indented under subclass 320. Compounds which contain a carbocyclic ring.

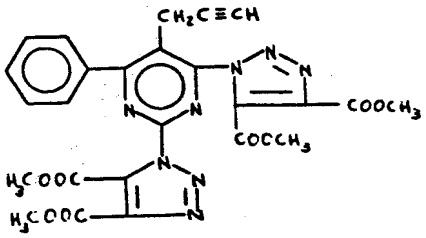
**322 Nitrogen attached directly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 242. Compounds wherein nitrogen is attached directly to the six-membered hetero ring by nonionic bonding.

**323 At 2-position and at 4- or 6-position:**
This subclass is indented under subclass 322. Compounds wherein the nitrogen is attached directly to the 2- and 4-position carbons of the six-membered hetero ring by nonionic bonding.

**324 Additional hetero ring which is unsaturated:**
This subclass is indented under subclass 323. Compounds having, in addition to the six-membered hetero ring, a hetero ring which has at least one double bond between ring members.

(1) Note. Examples of compounds provided for herein are:



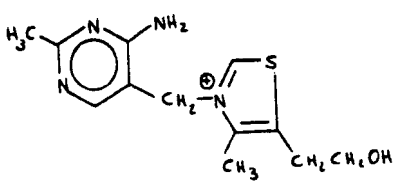


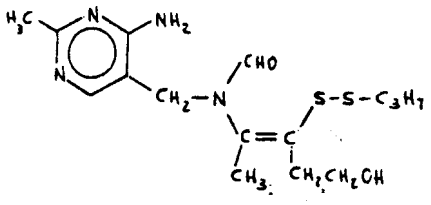
**325 Substituent on 5-position contains carbocyclic ring:**
This subclass is indented under subclass 323. Compounds wherein a substituent which contains a carbocyclic ring is attached to the 5-position carbon of the six-membered hetero ring.

**326 At 4- or 6-position:**
This subclass is indented under subclass 322. Compounds wherein the nitrogen is attached directly to the 4- or 6-position carbon of the six-membered hetero ring.

**327 Sulfur attached indirectly to the diazine ring by nonionic bonding (e.g., thiamines, etc.):**
This subclass is indented under subclass 326. Compounds wherein sulfur is attached indirectly to the diazine ring by nonionic bonding.

(1) Note. Examples of compounds provided for herein are:





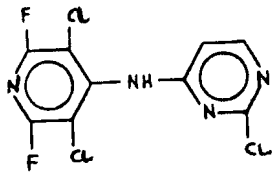
SEE OR SEARCH THIS CLASS, SUBCLASS:

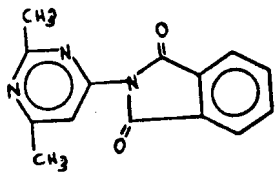
243, for thiamine derivatives having phosphorus substituents.

296, for thiamine derivatives having two or more pyrimidine rings.

**328 Additional hetero ring which is unsaturated:**
This subclass is indented under subclass 326. Compounds having, in addition to the six-membered hetero ring, a hetero ring which has at least one double bond between ring members.

(1) Note. Examples of compounds provided for herein are:





**329 Carbonyl attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 326. Compounds wherein a group is attached directly or indirectly to the diazine ring by nonionic bonding.

**330 At 2-position:**
This subclass is indented under subclass 322. Compounds wherein the nitrogen is attached directly to the 2-position carbon of the six-membered hetero ring by nonionic bonding.

**331 Additional hetero ring which is unsaturated:**
This subclass is indented under subclass 330. Compounds having, in addition to the six-membered hetero ring, a hetero ring which has at least one double bond between ring members.

**332 Chalcogen attached indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 330. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the six-membered hetero ring by nonionic bonding.

**333 Additional hetero ring which is unsaturated:**
This subclass is indented under subclass 242. Compounds having, in addition to the six-membered hetero ring, a hetero ring which has at least one double bond between ring members.

**334 Halogen attached directly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 242. Compounds wherein halogen is attached directly to the six-membered hetero ring by nonionic bonding.

**335 Chalcogen attached indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 242. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the six-membered hetero ring by nonionic bonding.

**336 1,4-diazines:**
This subclass is indented under subclass 224. Compounds wherein the six-membered hetero ring has nitrogens in the 1-and 4-positions, and carbons in the remaining four positions.

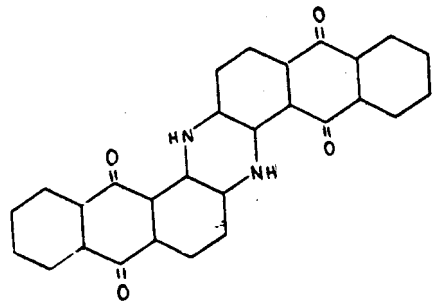
**337 Phosphorus attached directly or indirectly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 336. Compounds wherein phosphorus is attached directly or indirectly to the six-membered hetero ring by nonionic bonding.

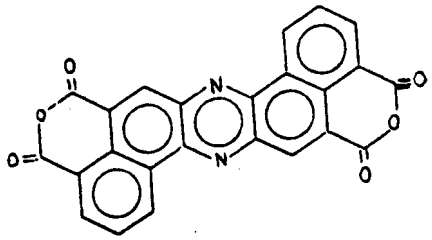
**338 Polycyclo ring system having the diazine ring as one of the cyclos:**
This subclass is indented under subclass 336. Compounds wherein the six-membered hetero ring is one of the cyclos in a polycyclo ring system.

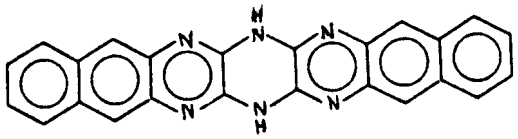
(1) Note. The positions of the six-membered hetero ring, even when it is part of a polycyclo ring system, are numbered as if it were a single ring.

**339 Heptacyclo ring system having the diazine ring as one of the cyclos (e.g., indanthrones, etc.):**
This subclass is indented under subclass 338. Compounds wherein the polycyclo ring system consists of seven rings.

(1) Note. Examples of compounds provided for herein are:





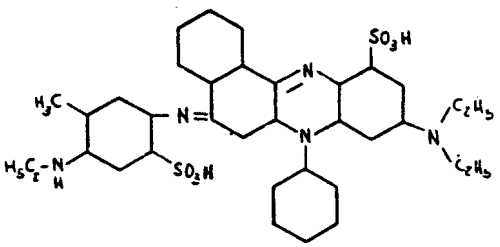
**340 Chalcogen attached indirectly to the heptacyclo ring system by nonionic bonding:**
This subclass is indented under subclass 339. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the heptacyclo ring system by nonionic bonding.

**341 Halogen, nitrogen, or carbon attached directly to the heptacyclo ring system by nonionic bonding:**
This subclass is indented under subclass 339. Compounds wherein halogen, nitrogen, or carbon is attached directly to the heptacyclo ring system by nonionic bonding.

**342 Pentacyclo ring system having the diazine ring as one of the cyclos:**
This subclass is indented under subclass 338. Compounds wherein the polycyclo ring system consists of five rings.

**343 Tetracyclo ring system having the diazine ring as one of the cyclos (e.g., benzophenazines, etc.):**
This subclass is indented under subclass 338. Compounds wherein the polycyclo ring system consists of four rings.

(1) Note. An example of a compound provided for herein is:

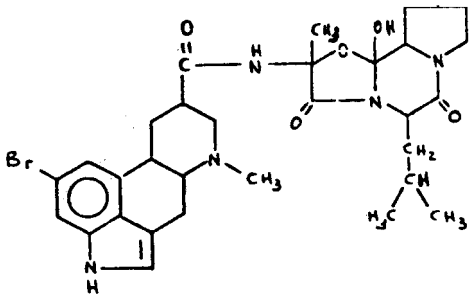


**344 Tricyclo ring system having the diazine ring as one of the cyclos:**
This subclass is indented under subclass 33. Compounds wherein the polycyclo ring system consists of three rings.

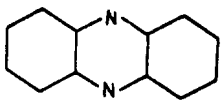
**345 Three or more ring hetero atoms in the tricyclo ring system:**
This subclass is indented under subclass 344. Compounds wherein the tricyclo ring system includes at least one ring hetero atom in addition to the two ring nitrogens of the six-membered hetero ring.

**346 Ring nitrogen is shared by two of the cyclos (e.g., ergot, alkaloids, etc.):**
This subclass is indented under subclass 345. Compounds in which a ring nitrogen is a member of two of the rings in the tricyclo ring system.

(1) Note. An example of a compound provided for herein is:



**347 Phenazines (including hydrogenated):**
This subclass is indented under subclass 344. Compounds wherein the tricyclo ring system has the following basic structure in which the bonds between ring members may be single or double bonds..

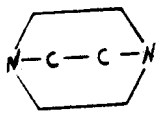


**348** **Nitrogen attached directly to the phenazine ring system by nonionic bonding:**
This subclass is indented under subclass 347. Compounds wherein nitrogen is attached directly to the phenazine ring system by nonionic bonding.

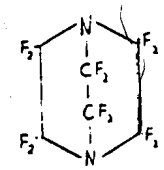
**349** **Bicyclo ring system having the diazine ring as one of the cyclos:**
This subclass is indented under subclass 338. Compounds in which the polycyclo ring system consists of two rings.

**350** **Three or more ring hetero atoms in the bicyclo ring system:**
This subclass is indented under subclass 349. Compounds wherein the bicyclo ring system includes at least one ring hetero atom in addition to the two ring nitrogens of the six-membered hetero ring.

**351** **Triethylene diamines:**
This subclass is indented under subclass 349. Compounds wherein the bicyclo ring system has the following basic structure:

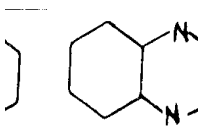


(1) Note. An example of a compound provided for herein is:



**352** **Process of forming, purifying, or recovering triethylene diamine per se, or salt thereof:**
This subclass is indented under subclass 351. Compounds wherein triethylene diamine per se is formed by a chemical reaction or is separated from impurities or a reaction mixture.

**353** **Quinoxalines (including hydrogenated):**
This subclass is indented under subclass 349. Compounds wherein the bicyclo ring system has the following basic structure, illustrated below, in which the bonds between ring members may be single or double bonds.



**354** **Chalcogen bonded directly to diazine ring carbon:**
This subclass is indented under subclass 353. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the six-membered hetero ring.

**355** **Having -C(=X)-, wherein X is chalcogen, bonded directly to diazine ring carbon:**
This subclass is indented under subclass 353. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to a ring carbon of the six-membered hetero ring.

**356** **Halogen or nitrogen attached directly to diazine ring carbon by nonionic bonding:**
This subclass is indented under subclass 353. Compounds wherein halogen or nitrogen is attached directly to a ring carbon of the six-membered hetero ring by nonionic bonding.

**357** **Plural diazine rings:**
This subclass is indented under subclass 336. Compounds which contain at least two of the six-membered hetero rings, each having ring nitrogens in the 1- and 4-positions, and carbons in the remaining four positions.

**358** **Piperazines (i.e., fully hydrogenated 1,4-diazines):**
This subclass is indented under subclass 336. Compounds wherein the six-membered hetero ring, having nitrogens in the 1- and 4-positions, has single bonds only between ring members, i.e., piperazines.

**359 Additional hetero ring containing:**
This subclass is indented under subclass 358. Compounds which contain a hetero ring in addition to the piperazine ring.

**360 Six-membered ring consisting of one nitrogen and five carbons (e.g., pyridine, etc.):**
This subclass is indented under subclass 359. Compounds wherein the additional hetero ring is a six-membered ring consisting of one ring nitrogen and five ring carbons.

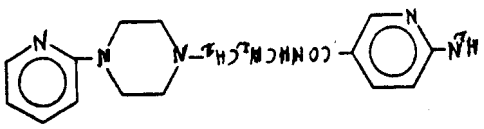
**361 The additional six-membered hetero ring is one of the cyclos in a polycyclo ring system:**
This subclass is indented under subclass 360. Compounds wherein the additional six-membered hetero ring is a cyclo of a polycyclo ring system.

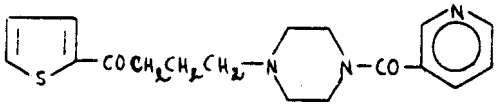
**362 The additional six-membered hetero ring is one of the cyclos in a bicyclo ring system:**
This subclass is indented under subclass 361. Compounds wherein the polycyclo ring system consists of exactly two rings.

**363 Quinoline or isoquinoline (including hydrogenated):**
This subclass is indented under subclass 362. Compounds wherein the bicyclo ring system is characterized by having a six-membered carbocyclic ring ortho-fused to two carbons of the additional six-membered hetero ring.

**364 At least three hetero rings containing:**
This subclass is indented under subclass 360. Compounds which contain a hetero ring in addition to the piperazine ring and the six-membered hetero ring consisting of one ring nitrogen and five ring carbons.

(1) Note. Examples of compounds provided for herein are:





**365 Having -C(=X)-, wherein X is chalcogen, bonded directly to ring carbon of the additional six-membered hetero ring (e.g., nicotinic acid, etc.):**
This subclass is indented under subclass 360. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), as bonded directly to a ring carbon of the additional six-membered hetero ring.

(1) Note. This subclass would also contain nicotinic acid addition salts of piperazines.

**366 Five-membered hetero ring having two or more ring hetero atoms of which at least one is nitrogen:**
This subclass is indented under subclass 359. Compounds wherein the additional hetero ring is five-membered having two or more ring hetero atoms, at least one of which is nitrogen.

**367 Ring chalcogen in the five-membered hetero ring:**
This subclass is indented under subclass 366. Compounds in which the five-membered hetero ring contains a ring chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) in addition to the ring nitrogen.

**368 The five-membered hetero ring is one of the cyclos in a polycyclo ring system:**
This subclass is indented under subclass 367. Compounds wherein the five-membered hetero ring is one of the cyclos of a polycyclo ring system.

**369 1,3-oxazole ring or 1,3-thiazole ring (including hydrogenated):**
This subclass is indented under subclass 367. Compounds wherein the five-membered hetero ring has a ring oxygen or ring sulfur in the 1-position, a ring nitrogen in the 3-position, and ring carbons in the remaining three positions.

**370** **1,3-diazole ring (including hydrogenated):**
This subclass is indented under subclass 366. Compounds wherein the five-membered hetero ring has ring nitrogens in the 1- and 3-positions, and ring carbons in the remaining three positions.

**371** **1,2-diazole ring (including hydrogenated):**
This subclass is indented under subclass 366. Compounds wherein the five-membered hetero ring has ring nitrogens in the 1- and 2-positions, and ring carbons in the remaining three positions.

**372** **Five-membered hetero ring consisting of one nitrogen and four carbons:**
This subclass is indented under subclass 359. Compounds wherein the additional hetero ring is five-membered consisting of one ring nitrogen and four ring carbons.

**373** **The five-membered hetero ring is one of the cyclos in a bicyclo ring system:**
This subclass is indented under subclass 372. Compounds wherein the five-membered hetero ring is one of the cyclos of a bicyclo ring system.

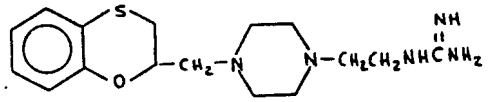
**374** **Ring chalcogen in the additional hetero ring:**
This subclass is indented under subclass 359. Compounds having in addition to the piperazine ring, a hetero ring which includes a ring chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

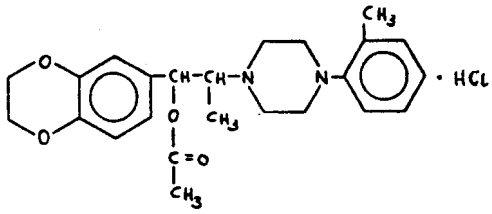
**375** **Polycyclo ring system having the additional hetero ring as one of the cyclos:**
This subclass is indented under subclass 374. Compounds wherein the additional hetero ring is one of the cyclos of a polycyclo ring system.

**376** **Bicyclo ring system having the additional hetero ring as one of the cyclos:**
This subclass is indented under subclass 375. Compounds wherein the polycyclo ring system consists of exactly two rings.

**377** **Plural ring chalcogens in the bicyclo ring system:**
This subclass is indented under subclass 376. Compounds wherein the bicyclo ring system contains at least two ring chalcogens.

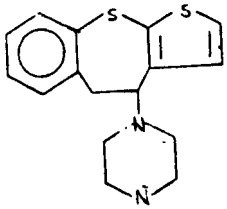
(1) Note. Examples of compounds provided for herein are:

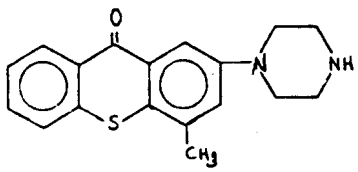




**378** **Plural ring chalcogens in the polycyclo ring system or the piperazine ring bonded directly to the polycyclo ring system:**
This subclass is indented under subclass 375. Compounds wherein the polycyclo ring system contains at least two ring chalcogens (i.e., oxygen, sulfur, selenium, or tellurium), or the polycyclo ring system is bonded directly to the piperazine ring.

(1) Note. Examples of compounds provided for herein are:





**379 The additional hetero ring is five-membered and unsaturated (e.g., thienyl piperazines, etc.):**
This subclass is indented under subclass 374. Compounds wherein the additional hetero ring is five-membered and has at least one double bond between ring members.

**380 Polycyclo-carbocyclic ring system having at least three cyclos:**
This subclass is indented under subclass 358. Compounds having a polycylco ring system which contains at least three carbocyclic rings.

**381 Piperazine ring bonded directly to the polycyclo-carbocyclic ring system:**
This subclass is indented under subclass 380. Compounds wherein the polycyclo-carbocyclic ring system is bonded directly to the piperazine ring.

**382 Nitrogen attached directly to the piperazine ring by nonionic bonding:**
This subclass is indented under subclass 358. Compounds wherein nitrogen is attached directly to the piperazine ring by nonionic bonding.

**383 Chalcogen attached directly to piperazine ring nitrogen by nonionic bonding:**
This subclass is indented under subclass 358. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached directly to a ring nitrogen of the piperazine ring by nonionic bonding.

**384 Chalcogen bonded directly to piperazine ring carbon:**
This subclass is indented under subclass 358. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the piperazine ring.

**385 Plural chalcogens bonded directly to piperazine ring carbons:**
This subclass is indented under subclass 384. Compounds wherein at least two chalcogen atoms (i.e., oxygen, sulfur, selenium, or tellurium) are bonded directly to the six-membered hetero ring.

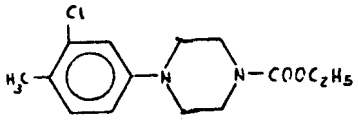
**386 Having -C(=X)-, wherein X is chalcogen, bonded directly to the piperazine ring:**
This subclass is indented under subclass 358. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium. or tellurium), is bonded directly to the piperazine ring.

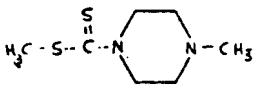
**387 Plural -C(=X)- groups bonded directly to the piperazine ring:**
This subclass is indented under subclass 386. Compounds wherein at least two groups are bonded directly to the piperazine ring.

**388 Chalcogen or acyclic nitrogen bonded directly to at least one of the -C(=X)- groups:**
This subclass is indented under subclass 387. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), or acyclic nitrogen is bonded directly to at least one of the groups.

**389 The -C(=X)- is part of a -C(=X)X-group, wherein the X's are the same or diverse chalcogens:**
This subclass is indented under subclass 386. Compounds wherein the is part of a X - group, in which the X's are the same or diverse chalcogens (i.e., oxygen, sulfur, selenium, or tellurium).

(1) Note. Examples of compounds provided for herein are:

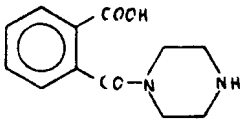


**390 Halogen or acyclic nitrogen bonded directly to the -C(=X)- group:**
This subclass is indented under subclass 386. Compounds wherein halogen or acyclic nitrogen is bonded directly to the group.

**391 Carbocyclic ring containing:**
This subclass is indented under subclass 386. Compounds which contain a carbocyclic ring.

(1) Note. An example of a compound provided for herein is:

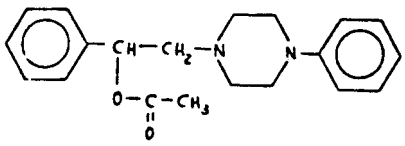


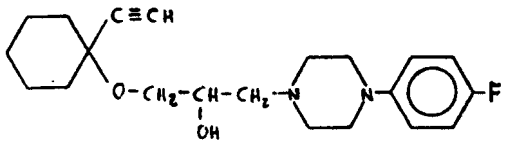
**392 Phenyl or napthyl bonded directly to ring nitrogen of the piperazine ring:**
This subclass is indented under subclass 358. Compounds wherein a phenyl or napthyl group is bonded directly to a ring nitrogen of the piperazine ring.

**393 Acyclic nitrogen bonded directly to a -C(=X)- group, wherein X is chalcogen:**
This subclass is indented under subclass 392. Compounds which contain acyclic nitrogen bonded directly to a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium).

**394 The other ring nitrogen has a substituent which includes chalcogen single bonded to acyclic carbon:**
This subclass is indented under subclass 392. Compounds wherein the other ring nitrogen of the piperazine ring has a substituent which includes chalcogen (i.e., oxygen, sulfur, selenium or tellurium) singly bonded to an acyclic carbon, e.g., an alcohol or ether, etc.

(1) Note. Examples of compounds provided for herein are:

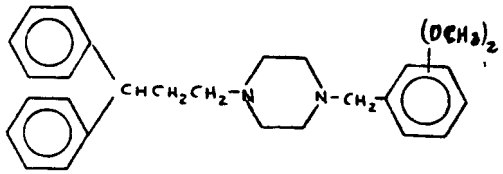


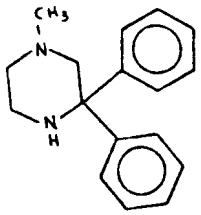


**395 The other ring nitrogen is unsubstituted or alkyl substituted only, or salt thereof:**
This subclass is indented under subclass 392. Compounds wherein the other ring nitrogen of the piperazine ring is unsubstituted or alkyl substituted only, or salts thereof.

**396 Plural carbocyclic rings bonded directly to the same acyclic carbon:**
This subclass is indented under subclass 358. Compounds which contain at least two carbocyclic rings bonded directly to the same acyclic carbon.

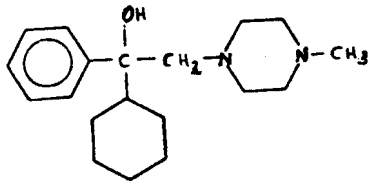
(1) Note. Examples of compounds provided for herein are:





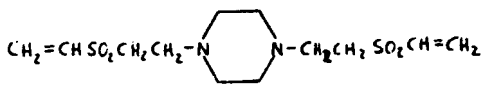
**397 Chalcogen bonded directly to the carbon:**
This subclass is indented under subclass 396. Compounds which contain chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) bonded directly to the acyclic carbon.

(1) Note. An example of a compound provided for herein is:



**398 Chalcogen attached indirectly to the piperazine ring by nonionic bonding:**
This subclass is indented under subclass 358. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is attached indirectly to the piperazine ring by nonionic bonding.

(1) Note. An example of a compound provided for herein is:



**399 The chalcogen, X is in a -C(=X)- group:**
This subclass is indented under subclass 398. Compounds wherein the chalcogen, X (i.e., oxygen, sulfur, selenium, or tellurium), is in an acyclic group.

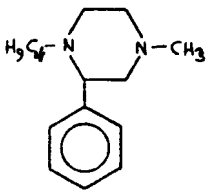
**400 Acyclic nitrogen bonded directly to the -C(=X)- group:**
This subclass is indented under subclass 399. Compounds wherein acyclic nitrogen is bonded directly to the group.

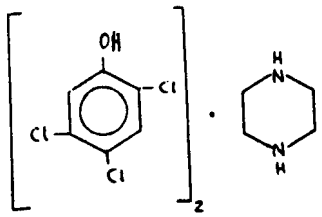
**401 The chalcogen is single bonded to both acyclic carbon and hydrogen:**
This subclass is indented under subclass 398. Compounds wherein the chalcogen is in a hydroxy group which is bonded directly to carbon.

**402 Nitrogen attached indirectly to the piperazine ring by nonionic bonding:**
This subclass is indented under subclass 358. Compounds wherein nitrogen is attached indirectly to the piperazine ring by nonionic bonding.

**403 Carbocyclic ring containing:**
This subclass is indented under subclass 358. Compounds which contain a carbocyclic ring.

(1) Note. Examples of compounds provided for herein are:





**404 N-hydrocarbyl piperazines:**
This subclass is indented under subclass 358. Compounds in which a hydrocarbon substituent is bonded directly to a ring nitrogen of the six-membered hetero ring.

**405 Additional hetero ring which is unsaturated:**
This subclass is indented under subclass 336. Compounds having, in addition to the six-membered hetero ring, a hetero ring which has at least one double bond between ring members.

**406 Having -C(=X)-, wherein X is chalcogen, bonded directly to the diazine ring:**
This subclass is indented under subclass 336. Compounds wherein a group, in which X is chalcogen (i.e., oxygen, sulfur, selenium, or tellurium), is bonded directly to the diazine ring.

**407 Nitrogen attached directly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 406. Compounds wherein nitrogen is attached directly to the six-membered hetero ring by nonionic bonding.

**408 Chalcogen bonded directly to diazine ring carbon:**
This subclass is indented under subclass 336. Compounds wherein chalcogen (i.e., oxygen, sulfur, selenium, or tellurium) is bonded directly to a ring carbon of the six-membered hetero ring.

**409 Halogen attached directly to the diazine ring by nonionic bonding:**
This subclass is indented under subclass 336. Compounds wherein halogen is attached directly to the six-membered hetero ring by nonionic bonding.

**410 Unsubstituted or hydrocarbyl substituted only, or salt thereof:**
This subclass is indented under subclass 336. Compounds wherein the six-membered hetero ring is unsubstituted or is substituted only by radicals which consist of hydrogen and carbon, or salts thereof.

END